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ORIGINAL ARTICLES.

A CONTRIBUTION TO THE SUBJECT OF INFANT-FEEDING.[1]

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IN any discussion of the subject of infant-feeding, there are two most important points that the medical profession should clearly recognize. First, the great responsibility the medical attendant is compelled to assume in adopting and advising any methods that later can possibly be perverted by the masses or lower classes of the community to the subsequent detriment of infant health and life; and, second, the development of the fact that the action of a certain degree of heat, from 140 to 160° F., when applied to cow's milk, renders the casein or curd more digestible, without injury to other valuably nutritious elements, at the same time rendering the food practically free from contamination of any disease germs it might accidentally convey.

Attention is directed to the first point for the reason that such advancement as has been made in our knowledge of artificial infant-feeding appears to have led to more and more complicated methods which are not fit to be entrusted to the weak intelligence of the proletariat; whereas, in order to obtain the greatest good with least danger of eventual harm to the innocent child, only the simplest methods should be aimed at. It is true that mankind has made gigantic strides in civilization, but it is also true that there remains as much ignorance or lack of common sense in the community to-day as ever. To illustrate the manner in which this responsibility attaches to results let us take a cursory review of the brief history of the progress of infant-feeding, which is limited to a little more than thirty years. At the beginning of this period, raw cow's milk, either whole or diluted with water, was by general consent adopted as the most available substitute for mother's milk. Owing, however, to the difficult digestion of the large dense clot of casein found in the infant stomach, it proved so deadly in its effects, especially in large cities during the summer months, that some improvement soon had to be made, and the one most favorably advised was the addition of some form of cereal, as barley or oatmeal, to act as a mechanical means of separating the particles of the clot, so as to prevent its becoming too firm and indigestible.

Soon it became distinctly noticeable that the lower classes were using corn-starch freely for this purpose, because it was cheap and easily prepared, and by some process of reasoning, scarcely known even to themselves, many gave it entire as a food, with what destructive results to infant life those of us who were in practice at that time well know. Later on Liebig's food, based on the principle of dextrinizing the starch of the cereals that were to be added to cow's milk, was introduced. This was speedily followed by a host of proprietary foods liberally advertised, most of which contained some preparation of malt that was tempting to the infant's palate and easy to prepare. These were well patronized by the working classes until their general harmfulness became convincing. Evaporated or condensed milk in bulk, as supplied in large cities, was also being recommended about this time, as it proved in fact to anticipate the later introduction of the principle of heating cow's milk to below the boiling point, the value of which will be demonstrated later on. But soon, however, it was observed that there was a large demand among the lower orders of the community for the canned condensed milk, which, by reason of its original purpose of supplying the army and navy with a milk, is altogether a different preparation from the fresh article sold in bulk, and is in every way unsuitable for a daily infant food. The truth of this statement was soon proven to the satisfaction of many observers by the large number of cases of rickets and marasmus seen at the clinics in this city in children who were being given canned condensed milk as a food. The difference between the condensed milk served in bulk and the canned is that the former has always professed to be simply an evaporated whole milk without any additional matter, while the canned or "preserved" article is deprived of a certain amount of fat which, according to Paton[1] of Glasgow, is necessary to prevent rancidity, and also has a large amount of cane sugar added for preserving purposes. Both are condensed to the same bulk.

It was early recognized by those observers, who later became leaders in the study of diseases of children, that the chief obstacle to the use of cow's milk as a substitute for mother's milk was the behavior of the curd or cheese in the infant's stomach, forming, as it does, large dense masses instead of the soft flocculent curd of human milk. This peculiar formation of the curd of cow's milk is incidental to the milk of all cud-chewing animals, and is due not only to the large proportion of proteids, of which casein forms the greater part, in cow's milk, but to the relative proportion of caseinogen to lactalbumin, which is large, being four to one, instead of one-half to one, as in human milk. This, according to Tuttle, together with the greater amount of calcium salts and acids in cow's milk, as stated by Hutchison, explains the density and firmness of the cheese clot. How

[1] Read before the Harlem Medical Association, 1901.

[1] Encyl. Brit., Milk.

to remedy or overcome this difficulty was the problem to be solved.

The progress that had been made in this direction prior to the introduction of bacteriology into medicine was by no means satisfactory, and so much interest was aroused by the study of germs and the prevention of their entrance into our bodies and daily food that when sterilization of cow's milk was introduced by Sohxlet all thought of the original pursuit of study regarding the behavior of the clot seemed forgotten. Fortunately, however, sterilization, or the application of the action of heat for destroying germs, opened up a new and unexpected field of study that has undoubtedly led to a more perfect solution of the vexed question than all the others preceding it. Jacobi, in a recent contribution (Report to the Internat. Med. Cong., 1900), has stated that the one great progress that has been made in infant-feeding these dozens of years is the heating of cow's milk, and, although this may refer to the destruction of germs, nevertheless it will stand as classical authority for generations to come. This is the second point of importance to which attention is invited.

I, as well as Keating[1] and others, had long ago witnessed the good results obtained from the feeding to infants of properly diluted evaporated or fresh condensed milk, and I published my views on this subject in the *Medical Record*, August 25, 1888. At that time and in that article I had reason to believe that this was the whole milk, but since the introduction of the separator I have had reason to change my opinion. The main point that I called attention to in that article was the behavior of the clot. It was observed in the vomit of the infant that the curd of the diluted condensed milk was similar to that of human milk, *i. e.*, of a light, flocculent character. This was attributed by me to some chemical action of the heat in the process of condensation upon the casein. Sohxlet's idea was to kill the germs, but he also rendered the milk so easy of digestion by his process that it more than confirmed my previous speculations.

Sterilized milk, however, as a daily food was not an entire success, owing to the fact that a number of cases of infantile scurvy, previously recognized as a rare affection, soon appeared in children fed for a length of time on this food. Investigation soon showed that the high degree of heat used for the purpose of killing germs was found not only to change the action of the milk-curdling ferment upon the casein of the cow's milk, but it also undoubtedly decomposed the fat, thereby favoring butyric-acid fermentation in the infant stomach, so rendering it less nutritious; it coagulated the albumins, globulins and nucleins, which are the phosphorus-bearing or antirachitic elements, and rendered the calcium salts insoluble by disturbing their combination with citric and phosphoric acid, thereby destroying their antiscorbutic properties.

Largely for this reason Pasteurization of cow's milk, or heating to about 140° F., was introduced, which, according to Prof. Russell of the University of Wisconsin, quoted by Blackader,[1] effectually kills or disposes of 99 per cent. of the contained germs in fifteen minutes, while it does not damage or destroy other vitally nutritious elements and is sufficient to modify the coagulation of the clot under the action of the milk-curdling ferment. Pasteurization as originally presented required, however, a special apparatus which was too expensive and complicated for the ignorant poor and therefore it did not become a popular method. Further study of the subject of infant-feeding led to Rotch's plan of scientific modification or so-called percentage feeding. This required preparation in special laboratories and, outside of its questionable value to the infant, proved to be beyond the means of the lower classes.

In all our efforts to perfect a substitute for human milk, it should always be borne prominently in mind that it is the masses we should seek to benefit and not the classes alone. Therefore, whatever method we, as a body of physicians, advise should be easily within the reach of the purse and intellect of the most humble in the community. There is no intention to cast adverse reflections on any method or process of infant-feeding. Good results in some way, perhaps not always the one originally intended, have been obtained from all. But in this matter we cannot afford to be overscientific. Our conception of the physiological processes of digestion and assimilation can never be reduced to the exactness of a mathematical calculation. The lactometer, the centrifuge, the weighing scales, litmus paper and the graduated glass are all of undoubted value in giving useful aid and information, but they can never be made instruments in the hands of the physician for reforming Nature's own processes.

Just here let it be understood and kept prominently in mind that beyond dispute the best of all foods for the human infant up to the first year of life is human milk. Individual exceptions do not count, and when they do occur their causation should by all faithful endeavors be righted.

The profession is most certainly to blame for neglecting to encourage and insist upon young mothers nursing their offspring or providing a wetnurse when one can be reasonably afforded. It would seem that we are too eager to perfect an artificial substitute, based even on the most scientific principles, to imitate human milk, rather than to make an effort to obtain the genuine article. Whether this is due to a laudable ambition to display our professional attainments, or to a baser spirit of commercialism that pervades the Anglo-Saxon character of to-day, is a question for philosophers to decide; but the fact remains that we do often permit our better judgment to be led astray by alluring statements. When our worthiest efforts to secure human milk for the infant fails, then it is time enough to think of an

[1] Practical Lessons in Nursing, 1887.

[1] N. Y. Med. Jour., Feb. 2, 1901.

artificial substitute. At the same time let it be remembered that even a limited amount of breast milk at any period of infant life is of real value when any substitute must be used.

Notwithstanding the obstacles before mentioned, cow's milk is by common consent accepted as the best and most available substitute for mother's milk that Nature presents. It is for this reason that cow's milk forms, in some manner, part of all the proprietary infant foods on the market, or must be added to them if the child is to thrive. For the same reason more attention has of late years been paid to the better quality and greater care in the handling of cow's milk by dairymen, and the milk supply of large cities has improved through more thorough inspection on the part of city authorities. Whatever method of artificial feeding, therefore, receives the approval of the majority of the medical profession should have in view simplicity and readiness of preparation, together with economy of cost and a most reasonable assurance of successful results. Combined with these, a point of equal importance in determining a fair estimation of its value is the faithful observance of a systematic method of regulating the time and quantity of feeding, proportioned according to the age or weight of the infant. For it should be remembered that overfeeding, either as to time or quantity, may discredit the value of even mother's milk by interfering with normal digestion, oftentimes erroneously attributed to the quality of the milk. This has been pointed out by Hutchison in his recent work on Food and Principles of Dietetics, who cites the fact that frequent nursing not only tires out the functions of the weak infant stomach, but also increases the amount of fat in the mother's milk to that extent as to cause a change in the normal proportions.

For the vast majority of infants of all classes of the community I have for the past six years found that the simplest, cheapest and best food for daily use is a fair average quality of cow's milk, diluted with water according to the age and digestive capacity of the child. The "top milk," or the upper portion of milk that has been allowed to stand in a vessel at a temperature not above 60° F. for from four to six hours, is sometimes preferable. The proportion of fat to proteids is much greater in such milk and will better bear diluting. A pinch of either table salt or phosphate of sodium is added, because cow's milk contains no soda salts, while human milk does, and a heaping teaspoonful of raw cane sugar to the quart. The mixture is placed in a double cooker, with cold water in the outer vessel, and allowed to remain on the fire for ten minutes after the water has begun to boil. This is virtually Pasteurizing the milk, which has become modified by dilution and the addition of salts and sugar. The principal and most important object of this process is not so much to attack germs as it is, as before mentioned, to act upon the casein in such manner that the character of the curd will be modified by the milk-curdling ferment in the child's stomach, analogous to rennet in the stomach of the calf, without doing injury to other nutritious components, as the nucleins, globulins, and calcium salts. This is materially aided by the dilution.

In regard to the matter of dilution, it was long ago recognized that the addition of water alone to cow's milk aided in a measure the modifying of the curd. The greater the dilution the easier of digestion the curd becomes, so that ordinarily for infants under three months of age I use equal parts of water and milk, and I have often been most agreeably surprised to see how well they thrive on this dilution of the steamed milk. For older babies one part of water to three of milk will usually prove satisfactory. If it be desirable to substitute barley or oatmeal gruel that has been cooked for at least one hour and dextrinized by the addition of cereo or diastase, there can be no reasonable objection; but this requires careful preparation which is not likely to be universally observed. [Dr. White of Boston in recent experiments, found that dextrinized cereals did not give as small and soft curd as did the undextrinized.] It is best indicated in special cases for a short period after a serious attack of intestinal disturbance. The advantages claimed for this method of steaming the milk previously modified by dilution, according to special indications and the addition of soda salts and sugar are that the vessel used for the purpose is cheap and can easily be kept clean, that there is no risk of losing the milk from breakage, as when a heated glass bottle is set in a pot or crock, and that by directing the boiling of the water to be watched the time of exposure to heat can be nicely regulated, so that a temperature of 140° F. will not be exceeded. Moreover, the inner vessel containing the milk can at once be removed, and the milk rapidly cooled by immersing it in cold water, meanwhile stirring the milk. The milk can then be poured into the ordinary milk-bottle and kept upon the ice until required for use, when it is again warmed to 98° F. in the nursing bottle by immersing for five minutes in hot water.

My experience with the use of steamed milk for the past six years as a daily food for infants has been extensive and altogether quite satisfactory. I find that it agrees well with most babies and they thrive, which means that they are happy and playful, have firm tissues and gain weight. In some few instances, when the cases could not be closely watched, constipation has occurred, but either a larger dilution or the addition of a small amount of malt-extract, say one dram to the quart, has relieved the difficulty. The addition of cream was tried in some cases, but did not work satisfactorily. The percentage of fat in good cow's milk is ordinarily ample, especially in the "top-milk," and I have come to believe that it is better to dilute the milk freely than to depend upon an increase of fat. If the process of assimilation be uninterfered with by overfeeding, the importance of maintaining a

proper percentage of fats to proteids and all other such quasi-scientific scruples may be easily set at rest.

In the country where clean milk can be obtained fresh from the cow, perhaps the steaming process might be dispensed with, and the views of some recent authorities realized. But it would prove dangerous to use such milk after it had stood for any length of time, especially in warm weather, on account of the animal heat inviting decomposition of the albumins and forming toxic ptomains. It is to prevent this that milk is cooled at once at the dairy, when it is to be kept or transported, and it is my opinion that after the milk had been once chilled the casein becomes more difficult for the human infant to digest.

The views here expressed have been intended to be practical rather than scientific. They may perhaps be regarded by many as heretical, considering the firm hold that the subject of percentage feeding has lately taken on the professional mind. But I will offer to assert that the homely fact that, when mother's milk cannot be secured, a good quality of cow's milk properly diluted and steamed is easily digested and causes the child to thrive, is as truly scientific as the theory of killing disease-producing germs conveyed by cow's milk to secure the thriving of the child, or that a facsimile of human milk may be obtained by any arrangement of the various elements of cow's milk, based on the percentage of fat or cream, which is the only element possible to estimate accurately in a ready manner outside of a chemist's laboratory, the remaining estimates being made by a mathematical calculation. While I believe in medical progress legitimately and intelligently pursued, I also have faith in conservatism. *"Festina lente"* is a good motto for the young practitioner. I do not consider that it adds to the dignity and honor of our noble profession to use science as a fad or plaything in order to exploit or display our college breeding, or to pose as a true lover of science before a credulously admiring public.

THE BACTERIAL PATHOLOGY, SYMPTOMATOLOGY, DIAGNOSIS, TREATMENT AND QUARANTINE OF TONSILLAR INFLAMMATIONS.

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THE subject which I present is one that is much misunderstood, a misunderstanding not confined to the "general practitioner," but common to the "specialist" as well. It is difficult for the older and many of the younger men in medicine to sever the long-wedded ideas regarding tonsillar inflammations and to realize that the physical disturbance and clinical manifestations cannot be relied upon in determining the etiological factor in these conditions. The following note received from a man of much clinical experience and hospital training fully demonstrates this point. A secondary culture was submitted in a case "for fear that there might have been some mistake in the first report," with the accompanying statement: "This case was never *clinically* a case of diphtheria. The patient never had a single symptom of diphtheria except a very slight dotted area on one tonsil which lasted but twelve hours." The cultures revealed the presence of virulent Klebs-Löffler bacilli. The patient died.

The inauguration of municipal health laboratories has been productive of results which have revolutionized the views pertaining to the pathology of tonsillar inflammations. The corroborative evidence is so strong that there can be no chance for mistake, and without a positive knowledge on the part of the attending physician many a tonsillar condition having a mild clinical disturbance has suddenly proven fatal, the usual cause assigned being "heart failure."

It has been amply demonstrated that a Klebs-Löffler infection is capable of wide variance and also that there are other micro-organisms which produce tonsillar inflammations, which, by their macroscopic appearance or clinical manifestations, cannot be differentiated from a Klebs-Löffler invasion or from one another.

Before taking up the discussion of these conditions I desire to call attention to the nomenclature in general use. The term "follicular tonsillitis" in the majority of instances is used to describe that inflammation of the tonsil in which the exudate, if any, is slight in amount and confined to the follicles. Such a term is misleading. A "tonsillitis" is an inflammation of the tonsil irrespective of its causal factor. A "follicular tonsillitis" merely emphasizes that the condition is localized as described. It has been amply demonstrated that such localization of inflammatory tonsillar processes can be either of a communicable or a non-communicable type. In view of this fact it would seem advisable that a nomenclature be adopted by which a more exact knowledge of the micro-organismal pathology be described, *e.g.*, in those conditions without such a causal factor affix the term "simplex." If the etiological factor be due to the Klebs-Löffler bacillus, affix "diphtheriticus;" if due to the streptococcus pyogenes, the Latin term-endings for that organism, etc. Such a nomenclature describing the micro-organismal pathology would be of the utmost assistance to the attending physician and the medical health officer.

The first disease to be discussed in accordance with such a nomenclature is *follicular tonsillitis simplex*, or that tonsillar inflammation which is confined to the follicles so far as any exudation is concerned, and is without known micro-organismal origin. The clinical picture in this ailment is sometimes severe. There is usually more or less swelling of the tonsil, with pain, particularly during "dry swallowing." The person has a rise in temperature, of great variance as to degree; not infrequently a severe bodily aching, sometimes of greater localization in the back and

head. It is the consensus of opinion, I believe, that such a symptomatology cannot be considered diagnostic.

In other instances there may be little or no exudation, but very slight tonsillar disturbance, no rise in temperature, and constitutionally the person in the best of spirits. Such a symptomatology is not diagnostic. I have in mind an instance in which a young child, not having any greater clinical manifestations than described, died in six hours from a Klebs-Löffler toxemia which had been mistaken for this ailment by depending upon the symptomatology.

There is but one means for positive diagnosis in this disease and that is by cultural methods, which in this instance will reveal the presence of the staphylococcus pyogenes aureus and albus almost to the exclusion of any other organism. It may be that these organisms are among the causal factors in the production of the ailment, but such point has not been clearly demonstrated and, until it is, the disorder should be, in my opinion, classed as described.

The treatment of follicular tonsillitis simplex is simple and the prognosis is excellent—the internal administration of calomel, the induction of free perspiration, the use of simple formulæ, employing aconite, bryonia, belladonna, etc., the use of glycerin with chloride of iron on the tonsils, or spray of Dobell's solution; in a few days the patient will be well. The organisms found in this disease are the inhabitants of most mouths during perfectly normal conditions and are not productive of any communicable tonsillar affection. For this reason quarantine measures are unnecessary.

The second class of diseases to be considered are those inflammations of the tonsil which on cultural examination show the presence of the Klebs-Löffler bacillus. Such inflammations may be localized on any and all portions of the tonsillar anatomy, including the follicles. The symtomatology may range from the most mild disturbance to a severe illness. There may be either little or no change in the macroscopical appearances of the tonsils or there may be a dense and adhesive membrane.

There are two important factors which influence the severity of any infection: First, the resisting powers of the tissues attacked, and, second, the attacking power of the invading organism. The Klebs-Löffler bacillus is capable of a wide variance in its infecting power, the tonsils are likewise subject to a wide range in their susceptibility. A case having a slight tonsillar involvement may have a severe clinical disturbance and *vice versa*. The most virulent Klebs-Löffler bacillus does not always produce the most localized tissue destruction. The constitutional disturbance depends upon the strength and rapidity of production of the toxin and its absorption.

The finding of the Klebs-Löffler bacillus is of the greatest importance and should at all times be the keynote for activity. The patient should be quarantined and treatment inaugurated, for no one can decide when the conditions regulating infection will change. When the Klebs-Löffler bacillus is found, no matter whether the illness be severe or not, that patient should be considered as "diphtheritic" and at least a small dose of antitoxin administered, such as would represent the quantity necessary for immunization.

The treatment of a patient more severely ill has to be guided by the amount of clinical disturbance. Locally the application of Löffler's solution, 10 per cent. nitrate of silver, 10 per cent. protargol, if the membrane be dense, is of value. Cleansing sprays of Dobell's solution or of Seiler's tablets assist. The internal administration of cardiac stimulants should be employed as conditions demand. Antitoxin should be employed in each and every instance, the amount and frequency depending upon the exigencies in the case. I believe that the minimum dosage in most instances should not be less than 2,000 units, repeated at intervals of six, twelve or more hours as indicated by persistent constitutional depression or other evidence of toxemia. Do not depend on antitoxin as the only treatment to administer. It will not materially hasten a disappearance of the Klebs-Löffler bacillus although it not infrequently hastens an exfoliation of the membrane by increasing tissue vitality and not permitting further local destruction. Use local applications and internal stimulation.

The prognosis of tonsillar and pharyngeal diphtheria is excellent if the infection be recognized early and if the treatment outlined be closely followed. As to ill-effects from the use of antidiphtheritic antitoxin, I believe them to be *nil*. The only unpleasant sequel to its administration that I have seen is the occasional production of an urticaria, which has never been of long duration, disappearing in from forty-eight to seventy hours, sometimes earlier. I am not convinced that this urticaria is the result of any principle in horse-serum or the antitoxic substance, but think it is due to some contamination in administration. The time of the introduction of the antitoxin has a material effect as regards influencing the length of illness. Investigations carried on in the Department of Health of Buffalo have resulted as follows: When administered on the first day the average length of illness, covering a large number of recovered cases, was ten days; on the second day, twelve days; on the third day, fifteen days; on the fourth day, sixteen days, and on the fifth day, about twenty days.

In cases in which antitoxin was not administered and the persons recovered, the average number of days of illness was twenty-seven.

The average length of time that the Klebs-Löffler remains in the secretions from the previously affected after complete recovery has been found to be fourteen days. This last factor materially influences the question of quarantine. Many instances have occurred in the city of Buf-

falo where a direct transmission of diphtheritic infection has been traced to persons who were not detained until the infection had entirely disappeared, or else the infection, being mild, had not been recognized.

A sad experience resulting from the failure on the part of a physician to utilize cultural methods in determining the true nature of an illness occurred in the household of a prominent attorney whose little daughter barely escaped death. There came to visit in this household a little girl who gave a history of having had some two months previous a mild throat affection. Seven days after her arrival, the daughter of the attorney was taken ill with a most pronounced Klebs-Löffler tonsillar infection. Cultures from the throat secretions of the visitor revealed the presence of Klebs-Löffler bacilli capable of producing death in the medium-sized guinea-pig in from fifty to sixty hours. There is little doubt that the dipththeritic infection was introduced into this household by the visitor. Had a proper diagnosis been made and quarantine established in this mild case, such transmission would have been avoided.

The next class of diseases to be considered is inflammation of the tonsil in which bacteriological examination reveals the streptococcus pyogenes to the exclusion of other organisms.

In the early part of March, 1896, the first investigation was carried on in the Buffalo Health Department, relative to a membranous condition of the tonsil with a severe clinical disturbance which resulted fatally. Dr. Potter of Buffalo, submitted a culture and examination revealed the presence of short-chain streptococci almost to the exclusion of any other organism. Being reluctant to consider the illness other than diphtheria, he submitted more cultures, examination of which resulted as in the former instances. A small piece of membrane accompanied one of the swabs and examination revealed the presence of the streptococcus almost to the exclusion of any other organism. As the result of these findings, a diagnosis of a streptococcus tonsillar infection was made. On the seventh day of the disease the patient died, the result of a general toxemia. Diphtheria antitoxin had been administered on two different occasions in large doses without the slightest beneficial effect.

This being the first reported instance in Buffalo of death resulting from a streptococcus tonsillar infection, the facts in the case were submitted to Dr. Hermann M. Biggs, director of the New York Bacteriological Laboratories, requesting information as to whether similar instances had occurred in New York. Dr. Biggs replied that they had had several deaths from streptococcus toxemia, the tonsils being the seat of the primary invasion.

The following statement of Dr. Thomas Bagley, Buffalo, N. Y., contains an interesting account of a severe streptococcus tonsillar infection:

"February 11, 1900, I was called to attend a boy, ten years of age. His parents stated that he had not been feeling well for about a day, complaining particularly of a sore throat. On examination, I found both tonsils enlarged, the right having the ordinary appearance of a follicular tonsillitis, the left presenting in its central portion a very suspicious membranous patch. The temperature at this time was 104° F.; pulse, 160; the patient was somewhat delirious and extremely nervous. On the second day the general condition was worse, the temperature being 105° F.; pulse, 170.

"The right tonsil still retained the appearance of a follicular tonsillitis, but the left tonsil was completely covered with a dark grayish membrane, resembling that usually seen in a severe case of tonsillar diphtheria. Becoming alarmed at the condition, 2,000 units of diphtheritic antitoxin serum were injected, and a culture sent to the Department of Health for confirmation of diagnosis. On the following day a report was received that the culture did not reveal anything typical of diphtheria, but requested that a second culture be submitted. In the meantime, the membranous patch had extended to the pharynx, into the posterior nasal passages, entirely covered the soft palate, and seemed inclined to extend forward. The right tonsil was completely covered with a membrane.

"The case clinically resembled diphtheria. A second culture was submitted and, at this time, I was successful in obtaining a portion of the membrane, which was likewise delivered to the bacteriological laboratory. The patient's condition was rapidly becoming more serious. The following morning a report was received that there were no diphtheria bacilli in the culture. Examination of the membrane revealed streptococci to be present almost to the exclusion of other organisms.

"On the fifth day of the disease, the temperature ranged from 103.5 to 105° F.; pulse, 120 to 170. There was no change in the appearance of the throat. Local treatment had included the use of strong solutions of the subsulphate of iron, a mixture of carbolic acid and glycerin, several applications of Löffler's solution, and continual use of peroxide of hydrogen. As the patient's condition was such that death seemed inevitable, and owing to the fact that streptococci predominated in the membrane, on the eighth day of the disease, as a last resort, 10 cc. of antistreptococcus serum were injected. To my surprise, the boy's condition began to improve. The membrane commenced to exfoliate, and three days later the uvula and left tonsil were entirely cleared of membrane. In a few days, the throat assumed a healthy appearance. The patient has made a good recovery."

May 29, 1901, the following experience occurred in the city of Buffalo. A culture was submitted by Dr. Bentz in the case of Miss McM—— and examination revealed the streptococcus to be the predominating organism. The clinical disturbance was most severe and the at-

tending physician considered it a typical Klebs-Löffler infection.

During an interval of three days 9,000 units of diphtheritic anti-toxin were administered without the slightest beneficial effect. On the third day the patient died of streptococcus toxemia. Had antistreptococcus serum been administered, it might have proven beneficial, as it had been demonstrated to be a streptococcus and not a Klebs-Löffler infection.

During the past year, an instance occurred in the practice of Dr. Carlton R. Jewett of Buffalo which demonstrates the possibility of transmission in streptococcus infections. Dr. Jewett submitted a culture from Mrs. H., who complained of sore throat for about ten hours, and who at the time had a ten-month-old nursing baby. At the first call of the physician, the child was taken from its mother and not allowed again to enter the room. Examination of cultures revealed the existence of a streptococcus infection. Curettings made from the tonsils fully corroborated this view. The mother, after several days of energetic treatment, began to improve. Three days following the positive diagnosis of the ailment, the child was afflicted with an erysipelatous condition of the face, beginning in the region of the mouth and gradually extending until the chest and abdomen were entirely involved. Two or three days later the child died of a streptococcus peritonitis. The mother made a good recovery. There seems little doubt that the child received its infection either direct from the throat lesion of the mother or through the lacteal secretions.

The treatment of streptococcus infections from the local standpoint is the same as that of diphtheria. Constitutionally the administration of diphtheritic antitoxin accomplishes little or no good. Instances of improvement like that related in Dr. Bagley's case would lead one to believe that in *known* streptococcus infections, the antistreptococcus serum is of value. Other constitutional treatments should be merely along stimulative lines.

As regards quarantine, I am of the belief that such infections should receive some quarantine measures.

The next class of diseases to be considered are those inflammations of the tonsil produced by the micrococcus of sputum septicemia. Dr. Carlton R. Jewett submitted a culture from the throat of Miss B. The patient was extremely ill, suffering from a condition considered by the attending physician and others to be tonsillar Klebs-Löffler infection. Examination of the culture did not reveal the presence of Klebs-Löffler bacillus. Reluctant to believe the condition to be other than diphtheria, Dr. Jewett requested the bacteriologist to visit the case in person. On the following day, under the direction of Dr. Jewett, I made several cultural inoculations and also succeeded in obtaining a small portion of the membranous exudate, which, at this time, covered the greater portion of both tonsils and portions of the uvula and nasopharynx. Examination of the cultures resulted as in the former instance. Examination of the membrane revealed the micrococcus of sputum septicemia in abundance.

The patient died about the tenth day of the disease. Drs. C. G. Stockton, H. R. Hopkins and Roswell Park had been called in consultation and were unanimous in the statement that as regards the macroscopic appearance of the tonsils and the clinical symptoms, the illness could not be distinguished from a case of severe diphtheria. Diphtheritic antitoxin of a reliable make had been administered at the onset of the disease without the slightest improvement. There is no question that this patient died from a toxemia due to the micrococcus of sputum septicemia, the primary lesions being confined to the tonsils, uvula and nasopharynx.

The principal treatment of sputum septicemic infections is the same as that occasioned by the streptococcus pyogenes, except that no antitoxic substance has as yet been discovered.

As regards quarantine, the organism is the common inhabitant of the human mouth, and but rarely infects. I do not think it requires such measures.

As regards tonsillar infections produced by the oidium albicans, many instances in which physicians have regarded the diagnosis as a Klebs-Löffler infection and the cultures revealed an abundance of the commonly termed "thrush" organism have occurred in the experience of Buffalo's laboratory. The membrane in these patients has been noted as being present on the tonsils and uvula, and in one instance a cast of the upper portion of the esophagus was submitted for inspection, the same having been mistaken for a cast of the bronchial tube. This condition is combated by the local application of stimulative alkaline washes and a general tonic treatment The prognosis is excellent. As regards quarantine, it does not seem to require such measure. In rheumatic anginas, fifty-two cases of suppurative tonsillitis or "quinsy" have thus far been investigated by cultural methods and the predominating organism found present was the staphylococcus pyogenes aureus. It seems most probable that this organism plays no other part in the etiology of the ailment than being the cause of the pus production. In three instances an organism corresponding to the colon bacillus was found in the abscess contents. As regards syphilitic tonsillar lesions, inflammation due the presence of irritants, etc., there is nothing to-day of any relative importance bearing on their bacterial pathology and such conditions are not considered in this paper.

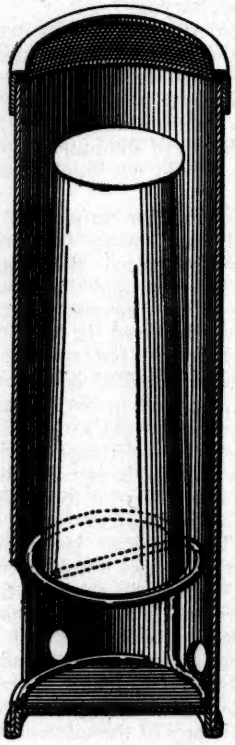
In the disinfection of premises after the existence of contagious maladies the following has been found to be satisfactory.[1]

There has recently been placed upon the market a candle consisting of paraformaldehyde

[1]Since this article was presented the manufacturers of the candles have changed and the new firm has substituted an asbestos container which in my experience does not prove as efficient as the old tin container.

which can be applied in the same manner as are those composed of sulphur. This candle consists of paraformaldehyde incorporated with a small proportion of paraffin and pressed in cylindrical form, the cylinders being of two different sizes. To utilize the candle, it is supplied in a tin container or burner to which a limited amount of oxygen has access during operation so as to support combustion only at the bottom of the candle, and by burning in this manner the heat produced causes the solid paraformaldehyde to revert to the gaseous formaldehyde.

Paraform burns freely and the flame would extend over the entire surface if some container limiting the supply of oxygen during combustion



were not employed. If the entire surface of the candle were allowed to burn, the gas would be converted into carbon dioxide and water by the flame and rendered inert for disinfecting purposes.

The smaller-sized candle contains, approximately, 350 grains of paraformaldehyde, and according to tests carried on in the Bureau of Bacteriology, Department of Health, Buffalo, N. Y., this candle when properly ignited, generates sufficient gas for the surface disinfection of a room not exceeding 300 cubic feet capacity, and by increasing the number of candles in the proportion of one to every additional 300 cubic feet of air space, this method can be relied upon for surface disinfection (the limitations of which are explained later) in rooms not exceeding 3,000 cubic feet capacity. With this, as with all other formaldehyde methods, if the room capacity greatly exceed this amount, even though an additional number of candles in the same ratio is applied, it is impossible to obtain by sufficient rapid diffusion the necessary concentration of the gas to insure constant results.

The best results in the use of this paraformaldehyde candle method of room disinfection are produced in the following manner: (1) The room made as nearly air-tight as possible; (2) the use of one small candle to each 300 cubic feet of air space, and not depending upon this means of surface disinfection in the apartments containing more than 3,000 cubic feet; (3) the surfaces of the articles to be disinfected to be so arranged us to allow free exposure to the gas; (4) the room to remain for from six to twelve hours; (5) *a cleansing process to supplement the procedure.*

Certain facts are to be particularly remembered in the application of this gas in household disinfection. While diffusing with great readiness, it possesses but slight penetrating properties.

These facts demonstrate that thoroughly to disinfect a room and its contents, we should not depend solely upon formaldehyde, but that in rooms having glazed surfaces, china, marble, metal, and the like, subsequent washing with solutions possessing recognized germicidal properties, as 5-per-cent. solution of formalin, 5-per-cent. carbolic acid, etc., should be employed. Thus, it is shown that while in formaldehyde gas we now have an efficient and harmless disinfectant for such objects as laces, plush, velvet, curtains, table-covers, hangings, and the like, when not of too heavy texture for which heretofore no satisfactory household method of disinfection had been devised, and while in many cases its action upon all objects may be efficient and satisfactory, and its action upon metals, picture frames, etc., harmless and non-corrosive, in cases of serious infection, in which it is possible that infectious matter, such as blood, saliva, sputum, feces, pus or urine may be dried upon wood floors, chamber-vessels, basins, washstands, glasses, metal bedsteads and other hard surfaces, its action should be supplemented by a cleansing and disinfecting solution possessing solvent and penetrating powers.

The writer desires to express his gratitude to Dr. DeLancy Rochester for many valuable suggestions pertaining to the treatment of tonsillar conditions.

Dr. J. C. White Leaves Harvard Medical School.—Dr. James Clarke White, who has been connected with the Harvard medical school longer than any other man, delivered his last lecture before Harvard students last week, and as a souvenir of the occasion he gave each man a copy of his well-known book, "Dermatitis Venenata." He has been an instructor and professor in the Harvard medical school since 1858.

THE DIAGNOSTIC USES OF THE GONOCOCCUS.

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THE *micrococcus gonorrhœæ*, or "gonococcus," as it is usually termed, was discovered by Neisser in 1879, in the purulent discharges of gonorrheal urethritis and conjunctivitis. It was subsequently successfully grown in culture by Bockhardt and Bumm, and its biological characters and causal relation to gonorrhea were worked out by these and other investigators. The organism is a large, non-motile, hemispherical or coffee-bean-shaped coccus, which, since it multiplies by simple fission in two planes alternately, occurs in pairs or fours, the sides toward one another being flattened or faceted and always separated by a narrow interval. This separation is due to the presence of a usually invisible capsule. The gonococcus is constantly present in the pus of acute gonorrheal urethritis, cystitis, endometritis, salpingitis and gonorrheal ophthalmia; but in the discharges from chronic forms of these disorders it is less frequently demonstrable. It also occurs upon the heart valves in the malignant form of gonorrheal endocarditis; it has been found in the joints in specific arthritis and in the affected tissues in parametritis; and has been demonstrated in the blood. It grows most readily upon mucous surfaces and is thought to flourish more luxuriantly in columnar than in stratified epithelium. In any mucous surface it burrows deeply among and into the cells, and may there maintain irritation and serve as a nidus for reinfection long after all acute discharge has ceased.

Some of the complications and sequelæ of gonorrheal infection are, it should be here remembered, due to other pathogenic organisms, the staphylococcus pyogenes aureus being most often at fault. The gonococcus does not, so far as known, grow outside of the human body, save in careful artificial culture. Upon exposure to light, air and ordinary temperatures the germs quickly die, infected materials thus soon losing their virulence. Kratter claims, however, to have demonstrated the presence of living gonococci on clothing which had been soiled some months previous by a gonorrheal discharge, and the disease is recently alleged to have been communicated to the dog. The micrococcus gonorrhœæ is readily stained by dilute solutions of any of the basic anilin dyes, and is easily demonstrated in the discharges of most cases of *acute* gonorrhea by any one possessing an elementary knowledge of bacteriological technic. Let us now briefly consider the question of the real value of such examination in the diagnosis of gonorrheal infection.

It has been claimed and taught that the morphological characters of the gonococcus, plus its occurrence in and upon the pus cells, give sufficient ground for its recognition, and that all that is necessary is to stain the suspected material with some anilin color, dry, mount and examine; if faceted cocci lying in pairs within the pus cells be found, they are gonococci; if such cocci be absent, the case is not one of gonorrhea. Now, while this may be true of most cases of acute gonorrhea of the male urethra, it is entirely insufficient for the absolute recognition of the disease even here, and especially untrustworthy and disappointing in chronic, in atypical, and in "suspected" cases of gonorrheal infection, in particular those occurring in other situations than in the male urethra—in the very cases in which the aid of laboratory diagnosis is most desired. There are other cocci which, when they multiply rapidly, show faceting of the sides in contact, thus very closely imitating the gonococcus; and cocci morphologically indentical with the gonococcus are found lying in and upon the pus cells in urethral and other discharges. Furthermore, the gonococcus is not always found within the pus cells, but is frequently met with floating free in the liquid portion of the discharge. Of course, when the gonococci are to be studied in tissues, blood, heart valve vegetations, etc., this seeming predilection for the pus-cell body is of necessity useless. The fact that the gonococcus does not stain by the Gram method is of more value in differential diagnosis than are its morphological features and location, but this also is not conclusive, since organisms are discovered which resemble gonococci in appearance, and fail to stain after Gram, but which are evidently *not* gonococci. In fact, we must acknowledge that the only indubitable bacteriological proof is obtained by growing the organism in culture. Its cultural peculiarities, together with its morphology, distribution and tinctorial reactions, will give the only trustworthy basis for an opinion in obscure cases. The growing of the gonococcus in culture is, however, by no means a simple procedure. It can be successfully carried out only by those possessed of a good knowledge of bacteriological laboratory methods and the requisite apparatus, facts which render the culture method unavailable in many instances. The alternative is then offered of utilizing the simpler method, of staining the suspected material and studying it with the microscope, or of depending upon other than bacteriological examination for diagnosis. And, with all of their theoretical uncertainties, the staining methods when properly carried out are of indisputable value and doubtless as reliable as are most of our available diagnostic measures. The results of such a carefully conducted examination are probably 95 per cent. correct, and the practical man should be satisfied with this percentage of accuracy, rather than expend an undue amount of work and worry in striving for unattainable perfection. Simply bear in mind the possibility that any opinion as to presence or absence of gonococci which is based upon miscroscopical examination alone may be wrong.

The following method of procedure, carefully carried out, will yield all the information which can be gotten from microscopical studies: Procure the pus or other suspected substance in as

fresh a state as possible and as free as may be from dirt, dust, or other secretions, and immediately make a number of neat "slide-spreads." This is best done at the patient's bedside, or at the office when the patient presents himself for examination. The material is readily spread into a thin film by means of a splinter of wood, a bit of tissue paper, or, preferably, the edge of another slide. It is absolutely necessary that a *thin, even film* be secured; the spreading of this film being in fact the most important step in making the examination. Unless a *thin* spread is obtained, subsequent manipulation is apt to prove a waste of time, as no trustworthy staining process can be carried through. Also, unnecessary roughness and violence in making these films should be scrupulously avoided, to the end that the leucocytes and epithelial cells be not crushed and distorted, a result which would seriously interfere with the subsequent determination of the location of gonococci possibly present upon or in the cells. After a sufficient number—three to six—of satisfactory slide-spreads are procured, they should be allowed to dry thoroughly in the air, without heat, and may then be kept for hours or days, until a convenient time for completing the examination presents itself; or they may be sent through the mail to a laboratory for examination.

The next step is the "fixing" of the film by heating the slides in an oven or over an alcohol flame to a temperature sufficient to coagulate the albuminous constituents, but not enough to char or scorch—about 175° F. is to be preferred. One slide is then stained for five minutes in Loeffler's alkaline methylene (methylene blue 1 gm.; solution of KOH in distilled water, 1 in 10,000, 100 c.c.). The stain is poured off, the slide washed in clean water until no more blue color comes away, and then dried in air, without artificial heat. By this method the nuclei of the pus and other cells are stained a clear blue, as are *all* microorganisms present in the specimen.

A second slide is now stained after the Gram process, as follows: Place in a test-tube 10 drops of pure anilin ("anilin oil"); add ½ ounce of distilled water, shake violently for a half minute and run the resulting milky or opalescent fluid through a wet filter into a watch-glass. To this filtered "anilin water" add a saturated alcoholic solution of gentian violet until a metallic luster appears as a film upon the surface of the mixture (about 10 per cent. of gentian violet solution is required). With this "'anilin water-gentian violet" stain the film on the slide for three minutes; pour off surplus stain and rinse the slide momentarily in clean water. Then flood the slide with a dilute Lugol's solution of iodine (Lugol's solution and distilled water, equal parts). The film quickly becomes brownish black and opaque. After one minute pour off the iodine solution, rinse in water and then pour alcohol over the slide. The film now changes to a blue, and this color is rapidly discharged by the alcohol, which latter should be repeatedly poured over the slide until no more color comes away—about three minutes usually. The film should now be almost colorless; it is dried in air and is then ready for examination. Those organisms which take the Gram stain are seen to be a deep violet color, almost black; many of the cell nuclei retain a *faint* violet stain. The common pus cocci, many other cocci and pathogenic micro-organisms take this stain; *the gonococcus does not* and should be invisible in preparations stained by this method.

Stain a third slide after the Gram method, as just described. After decolorization in alcohol counterstain the film with a dilute solution of saffranin (aqueous). Rinse in clean water, and allow the slide to dry in air. All organisms, the gonococcus included, not colored by the Gram stain will be found stained a distinct saffranin pink. When especially thorough search for gonococci is to be made it is well to have several slides stained by each of the three methods just outlined.

The staining of the slides being completed, careful and painstaking examination of each of them should be made with the microscope and a $^1/_{12}$ homogeneous immersion lens. The use of a cover-glass is unnecessary; simply place the drop of immersion fluid upon the thoroughly dry uncovered film. A good lens, proper illumination, patience, time and a knowledge of the morphological and other peculiarities of the gonococcus will make possible the recognition of the organism in almost all cases in which it may be present. Many slides and an hour or two of patient search may, however, be necessary before one can safely venture a negative opinion.

In the methylene-blue preparations all microorganisms are found to be stained blue. Look for coffee-bean shaped diplococci and note carefully whether they lie upon and in the bodies of the pus cells, or whether they lie free between the cells. Note the possible grouping of the cocci in twos or fours; and the existence of larger groups of cocci. If no organisms answering to the description of the gonococcus be found after prolonged search through several methylene-blue preparations, it is unlikely that the gonococcus is present. If gonococcus-like organisms be seen, examine the Gram-stained slides and note whether these organisms have taken the Gram stain; if they have, they are *not gonococci*, however much they may resemble this organism in shape, grouping, relation to pus cells, etc. If, on the contrary, these faceted cocci have not been tinged in the Gram preparations, one can be almost sure that they are gonococci. Examine now the double-stained (Gram and saffranin) preparations. These two stains together color all organisms present, and in well-made slides it should be easy to differentiate Gram-stained cocci from those which do not stain after this method, but take up the saffranin color. The common pus-producing staphylococci and streptococci, the diplococcus pneumoniæ and some other pathogenic organisms with which the gonococcus might possibly be confounded are seen stained a deep violet color. The

gonococcus, if present, is stained by the *saffranin*.

In cases of acute gonorrhea of the male urethra there should be no difficulty in demonstrating the specific organism in any and every slide; other micro-organisms will be few in number or entirely absent. In cases of longer standing the gonococci should be found, but they will be much less numerous and associated with many pus cocci and other bacterial growths. In chronic gleety and other discharges which have been actively treated the recognition of the gonococcus is difficult, owing to the small number of gonococci and the large number of complicating pathogenic organisms present in the secretion; and because of the important fact that the germicidal injections employed have, while not entirely destroying the gonococcus, caused it to grow and multiply slowly and in an atypic way, giving rise to involution forms which may be unrecognizable as gonococci by staining methods, although, if uninterfered with for a time, able to develop into typical and virulent gonococci.

In these cases cultural methods give much the more valuable results and should be resorted to in all cases of importance, when the necessary apparatus and technical skill are possessed. The culture diagnosis is the only absolute dependence in medico-legal cases. The following, after Wertheim, is a comparatively simple method of applying the culture test: A minute portion of the suspected discharge is thoroughly mixed with sterile, liquid blood serum in a culture tube, at a temperature of 40° C. Two dilutions are now made from this first inoculated tube and to the liquid serum contained in each of the three tubes an equal part of melted, sterile, 2-per-cent. agar-agar at 40° C. is added. The contents of each tube are then poured into a sterile flask or Petri dish and placed in the incubator at 37° C. Within twenty-four hours, usually, minute colonies will make their appearance in one or more of the dishes, the gonococcus colonies being colorless and semi-transparent, with irregularly scalloped edges. These young colonies should immediately be transplanted to slant tubes of sterile chest serum-pepton-agar, upon which, after a few days in the incubator at 37° C., characteristic colonies develop. Microscopic examination after staining with Loeffler's blue and by the Gram process will complete the identification of the true gonococcus colonies.

Slant tubes of nutrient agar upon the surface of which sterile blood-serum has been smeared may be directly inoculated with suspected material, a good growth of gonococci being sometimes obtained. The danger that the colonies will be overgrown by other organisms is, however, much greater than when the dilution method just described is employed. Heiman's medium is also much used. It consists of pleuritic fluid or fluid from a hydrocele, fractionally sterilized, to which has been added 2 per cent. of the following mixture: Agar-agar, glucose, and peptone, each 2 parts; sodium chloride, ½ part. Slant tube cultures of gonococci are readily grown upon this medium. The addition of a little *acid urine* to any of the ordinary nutrient agar media is found to make possible the growth of the gonococcus upon them. A cultural characteristic of the gonococcus is its comparatively ready growth upon the special media just mentioned, and its absolute refusal to grow upon the nutrient culture materials commonly used in laboratories for the study of bacterial growths.

The culture test, when carefully carried out, is much more accurate and more delicate than the most skilfully-conducted microscopic examination, often revealing the presence of gonococci when prolonged search with the microscope in stained preparations had given only a negative result. By cultural means gonococci have been detected in the blood, in joint effusions, in salpingitic pus, on the heart valves, and in old gleety discharges which were seemingly free from gonococci.

The adequate bacteriological diagnosis of gonorrhea is thus seen to consist in more than the simple microscopical examination of anilin-stained films. Although time consuming and calling for some skill, the cultural examination for gonococci in important doubtful cases will amply repay the physician for all trouble expended, and the slide-spread staining methods is not to be lightly regarded, since it frequently shows the nature of an acute urethral or other infection more quickly and accurately than any other diagnostic means at command. No physician should treat urethral inflammations without making, or having made, an examination of the discharge to determine the possible existence of specific infection, and no case of gonorrheal urethritis should be discharged as cured until all suspicious cocci have entirely disappeared from the discharge. In cases in which it is of great importance to be sure that a *cure* has been obtained, as when marriage is contemplated, a culture had best be made.

105 St. Joseph Street.

POISONING BY ACONITE (THE CONDON CASE) AND THE PHYSIOLOGICAL ANALYSES OF ALKALOIDS.[1]

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THE subject for consideration involves an attempted poisoning with one of the most active of all known alkaloids—aconitine.

The story of the case, related by the prosecution, runs as follows: In April, 1897, at Springfield, Mass., Mrs. Condon, the defendant, was actively interested in stock speculation and found herself greatly embarrassed by the Dean Company's failure, occurring at that time. Among her creditors, mostly women friends, a Mrs. Hunt was very insistent upon repayment of a few hundred dollars. She called upon Mrs. Condon

[1] Résumé of a paper read before the Medico-Legal Society, New York, Nov., 1901.

for the money on a Monday, and, as a consequence of her insistence, was promised full payment on the following Friday evening. The day after this call, Tuesday—as shown by the prosecution—Mrs. Condon accompanied a cousin, a self-styled "Doctor," to a local drug store, where he bought at her request and immediately gave to her a two-ounce bottle full of tincture of aconite.

Friday afternoon the defendant purchased from a near-by liquor dealer a pint of port wine and with this she filled a small flask which was sent to Mrs. Hunt that evening instead of the promised money. In this wine was a more than fatal dose of aconitine. As a cover to the crime, a similar portion of this port wine was sent by the defendant to another friend, but this portion contained no poison.

The poisoned wine reached its intended victim so late in the evening, as the woman was about to retire, that the gift was merely tasted and placed upon a shelf. Saturday morning upon awakening, she felt quite badly and, remembering the wine, went for it and at once drank one half of its remaining contents. Continuing to feel ill, Mrs. Hunt lay down and soon became strangely worse. She felt very cold and numb, dizzy, unable to move, feeling throughout the muscles of her limbs a peculiar creeping sensation. Her vision became obscure and, overcome by a general feeling of despair and alarm, the victim, who all this time had been alone in her apartment, struggled to the door and called for help. Assistance came none too soon. A woman answering the call found her already fallen upon the floor and powerless. A physician was immediately called and responded most promptly. To him, Dr. Rice of Springfield, is due the entire credit of saving the woman's life. After three hours of untiring effort on his part, Mrs. Hunt was out of danger and slowly recovering.

The evening of that same day, what remained of the poisoned wine and other samples were delivered by the Chief of Police to Prof. E. P. Harris of Amherst College, at whose request the writer was sent for and upon his arrival at Amherst associated with him for the toxicological work.

The chemical examination of the suspected liquid was pushed to its utmost and by specially devised analytical methods an alkaloid poison which proved to be aconitine was identified; it was also found that the wine sent to the other friend contained no poison.

Minutely detailed notes of the entire work have been kept and may be consulted by those interested in such ultimate analyses of alkaloids, but they are too extensive for reproduction here.

Our chemical methods of qualitative analysis conclusively proved that the port wine of the small flask contained aconitine, but the quantity of the dose remained a most important problem. It is firmly established in the minds of the investigators that no evidence of criminal poisoning can be conclusive unless the poison be *absolutely* identified and its *quantity* determined.

They are fully aware that no testimony as to the determination of the amount of alkaloid poison used in a criminal case has been offered in which the toxicity of the alkaloid is sufficient to provoke death in a total absorption of some milligrams. The reasons for this are obvious; for the total weight to be determined in such a case approaches too closely the limits of error of chemical balances, thus invalidating gravimetric methods of quantitative analysis; the only ones heretofore in use.

However, having succeeded in identifying an alkaloid, which chemists in general confess their inability to do, it is proposed to determine its quantity by original methods of great precision, the results of which shall be unquestioned.

Such methods in toxicology we propose to designate as physiological analyses, in illustration of which are offered the details of animal experiments in the Condon case, with the least possible preliminary to render their comprehension easy.

It has been for years the claim of some chemists that aconitine possessed no sufficiently characteristic chemical reactions to allow its qualitative determination and was so active a poison and used in so minute quantities that any quantitative analysis would be impossible.

That aconitine is easily and absolutely identified by qualitative chemical analysis has been amply demonstrated by the chemical part of our work. That this same poison, however minute its dose, can be quantitatively estimated by methods proven accurate to a variance of $^{6}/_{1000}$ of a milligram is the result of a series of experiments on the estimation of this poison by the graphic method applied to the observations of its effect on animals.

By such experiments, the means of detecting and accurately estimating minute quantities of poisons, and at the same time determining the most important factor of all in a case of criminal poisoning—the toxicity, are for the first time made public and have now established their legal admissibility and precedent (Commonwealth of Massachusetts, Western District, Superior Court, 1898, October, sitting *in re* Commonwealth *vs.* Condon).

In devising this system of physiological analyses, the author wishes to acknowledge his indebtedness to the previous experimental work with animals of his former teacher, Dr. Laborde, Director of the Laboratories of Physiology of the Medical Department of the University of Paris, and to the physiological studies of the toxicity of animal bloods and tissues made by his master and teacher, Charles Richet, Professor of Physiology in the University of Paris.

Aside from the suggestion made by Dr. Laborde of the use of the graphic curves for the identification of the poison, there seems to be no record of any attempt at a quantitative physiological analysis in toxicology; therefore, the following experiments and their results constitute the pioneer steps of a method that would seem destined to become very important in all cases of

criminal poisoning that involve small doses or require careful differentiation.

Aconitine: Chemical, Clinical and Toxic Properties.—The alkaloid aconitine is the most violent of the vegetable poisons. Its chemical formula has been a subject of considerable discussion, but the study of the hydrolysis of aconitine leads to the conclusion that it is mono-benzoyl aconine—$C_{25}H_{40}(C_6H_5CO)NO_{11}$.

In order to substantiate this inference, experiments have been made with a view to reversing the hydrolysis and reconverting aconine into aconitine. Since aconine is a comparatively strong base, it should be able to decompose ethyl benzoate and form aconitine, or anhydro-aconitine if the temperature be high. An alcoholic solution of aconine, heated in a closed tube for three hours at 130° C. with a slight excess of the alkyl salt, was then examined. After the removal of the unaltered ethyl benzoate, etc., a base was isolated with ether, the crystalline hydrobromide of which corresponded with the same salt of anhydro-aconitine, identical with that obtained by the dehydration of aconitine.

In view of these reactions there can be little doubt of the correctness of the chemical formula $C_{33}H_{45}NO_{12}$ for aconitine.

When pure this alkaloid crystallizes in tabular crystals of the rhombic system. The crystals are soluble in 750 parts of water, 64 parts of ether, 37 parts of absolute alcohol, and 5.5 parts of benzene or chloroform.

Two crystalline auro-chlorides are easily obtained and afford a satisfactory means of identifying the alkaloid, which may be recovered from them in a pure state.

One auro-chloride ($C_{33}H_{45}NO_{12}HAuCl_4$) melts at 135.5° C. The other, with a formula $C_{33}H_{45}NO_{12}AuCl_3$, melts at 129° C.

There are two isomeric varieties of aconitine which may be distinguished as *A* and *B*. Both are obtainable in crystals of the same form and size and have the same chemical formula, but *A* aconitine melts between 182° and 184° C., and has a toxicity only one-sixth of that of the *B* aconitine, which melts at 188.5° C. (This great difference in the toxicity of the isomers is a striking example of how much more the vitality of cells is affected by the form than by the composition of matter—a fact not sufficiently recognized by all toxicologists).

The presence of a small trace of pseudo-aconitine makes it a very difficult matter to obtain the real aconitine in crystalline form, for it then has a strong tendency to be amorphous.

The most soluble salt is the nitrate of aconitine and that is the usual salt of commerce, for aconitine is a weak base. Its taste is slightly bitter, but very biting, irritating the mucous membrane of the nose and throat oftentimes to a degree to provoke sneezing. Its contact with the tongue is said to cause a characteristic tingling, numbing sensation, but several trials by the author and other chemists have utterly failed to give any such feeling. Duquesnel and Laborde report that this characteristic varies with the different kinds of aconitine, and in view of the combined negation of the constancy of this action it is evident that this particular sensation should not be looked upon as a characteristic of aconitine.

If an overdose of aconitine has been taken, the pricking and burning sensation extends from the tongue to the back of the throat, and is almost immediately followed by salivation, nausea, vomiting, dizziness, cardiac disturbances and syncope. There will be noticed a dilatation of the pupils with troubled or loss of sight, fibrillary muscular contractions, itching and creeping sensation of the skin about the face and extremities, which then become benumbed and paralyzed. The head, lips, and limbs seem to the patient to be of an excessive size. The pulse is irregular, a strong diarrhea commences. There are clonic spasms, cold sweats. The body temperature falls. The voice fails. The breathing is more and more stertorous, and death follows without great delay.

The intelligence, aside from a condition of syncope, remains intact to the last. That recovery is sometimes possible is proven by a case reported by Chaudeleux and by the recovery of the victim of the attempt to poison herewith reported.

The physiological studies of Liegeois, Guilleaud, Laborde and others show that aconitine is a poison of the central nervous system, which it stimulates first to paralyze later. It likewise paralyzes the peripheric nervous system (sensory, motor and secretory nerves—see experiments) and finally attacks the sympathetic system, the muscles, the heart and the respiration through the bulbus. Laborde insists upon the effects of the poison on the heart, which is accelerated, becomes irregular and finishes in tetanization, an effect of the intermediation of the bulbospinal system.

Postmortem.—The autopsy on a victim of aconite-poisoning reveals an intense congestion of liver, kidney and spleen, hyperemia of the mucous membrane of the mouth, esophagus and stomach, the blood thick, of a dark wine color or black, the heart in diastole and engorged with blood. The poison will be found chiefly localized in the contents of the stomach, the intestines, kidneys, urine and blood.

Animals are very sensitive to the action of aconitine, one milligram of which will kill a dog, one-fifth of a milligram a rabbit, and one-tenth of a milligram a frog. The pigeon is perhaps the most delicate means of studying the action and determining the amount of this poison, but in all cases of physiological analysis, the greater the number and variety of the animals used for the experiments, the more precise and exact will be the results of the work.

In the human being aconitine is the most poisonous of all known alkaloids, producing effects of a very decided nature in a dose of only one-tenth of a milligram. One milligram produces most severe symptoms of intoxication and three milligrams could be fatal. Cases of death result-

ing from aconite poisoning are not rare, but most of them were caused by suicidal intent or a mistake in the taking of medicine.

In the annals of crime, aside from the well-known "Lamson case" in England, little use of aconitine by poisoners is found. The few cases reported upon since that time are given full discussion, with reports *in extenso* of the case of Commonwealth *vs.* Condon, in which the poison and its amount are for the first time in toxicology positively determined.

The system of physiological analysis for the identification of alkaloids and the exact estimation of minute quantities, as well as the determination of relative toxicities, is based upon the idea of intravenous injection of a determined volume or weight of the suspected substance in a series of animals. The resulting symptoms, pulse-beat, blood-pressure, convulsions, paralyses, respiration, etc., are then carefully tabulated by the graphic method.

Having identified chemically or clinically the alkaloid, a standard solution of the same is prepared with perfectly pure water (or artificial serum). Of this solution, varying but always known, quantities are injected intravenously or otherwise introduced into animals, as nearly identical physiologically as possible with those of the series experimented on with the suspected material. The resulting symptoms are then tabulated graphically, until for each animal a curve is found which most exactly corresponds to the curve previously obtained from the similar animals injected with the suspected substance.

When the curves correspond, that obtained with a known amount of the standard solution of the alkaloid salt gives us the exact dose of poison and thus determines the quantity in the suspected substance.

To test the accuracy of this physiological analysis, after determining by its aid the amount of aconitine contained in the wine, a large, accurately-weighed portion of chemically-pure nitrate of aconitine was made up in a dilute solution, the exact titration of which was known only to the chemist, Prof. E. P. Harris. By purely physiological analyses, the titration of this solution was then determined by the writer, using only six cubic centimeters of the solution. The quantity reported by him *as found* in no case varied by more than $^{6}/_{1000}$ of a milligram from the quantity *used* by the chemist.

By reference to the reports of the experiments it will be seen that the quantity of the aconitine requisite to duplicate the symptoms produced by the alkaloid contained in the poisoned wine is to be found in a solution of which each cubic centimeter contains one-tenth of a milligram of aconitine.

By careful measurement of the contents of the flask delivered to us and from the evidence of the amount it contained before the woman drank from it, it was determined that she took into her stomach at that time a minimum of thirty-four cubic centimeters of the wine, of which each cubic centimeter contained one-tenth of a milligram of aconitine. The woman consequently swallowed the equivalent of three and four-tenths milligrams of the pure alkaloid aconitine, three milligrams of which might constitute a fatal dose. More than this she took into her system and her survival is to be attributed only to the remarkably efficient and prompt assistance rendered by her physician.

Mrs. Condon was tried at the October session of the Superior Court (Hampden District) of Massachusetts. After the prosecution had closed its case, the nervous collapse of the defendant occurred and her condition of health has ever since remained so precarious as to exclude all possibility of retrial.

In concluding the relation of our work on this case, aside from introducing these methods of physiological analyses and insisting upon their great utility and precision in determining minute quantities of powerful poisons, while pointing out the great assistance afforded by these methods for the identification of alkaloids, we beg also to present to you the facility to be obtained for the separation of combined alkaloids, on account of the variation of the time required for each alkaloid to pass through the animal system.

To say, as has been said in recent years in this city, that the combination of alkaloids in a case of poisoning renders the toxicological work impossible or its evidence valueless, is worse than pretence—it is ignorance.

Throughout a long series of experiments, we have yet to find an alkaloid which we were not able to identify by these methods of animal filtration and analysis, alone or conjoined with methods of chemical examination and control.

SOME SUGGESTIONS RELATIVE TO THE TREATMENT OF TUBERCULOSIS.

BY F. M. POTTINGER, PH.D., M.D.,
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TUBERCULOSIS we have always with us. We have grown so accustomed to it that we accept it as a part of the inevitable, and heretofore we have dealt with it in a sort of "let alone" fashion. While the disease was known to the ancients and while it has decimated the ranks of mankind throughout the ages, it was reserved for the last quarter of the nineteenth century to discover the nature of the disease and to lay down rules for its eradication; and it is still reserved for the first quarter of the twentieth century to see that these rules are enforced. May we, of this generation, gladly take up this work and hand down as our heritage to mankind "the destruction of the power of the great white plague."

The discovery of the tubercle bacillus as the cause of tuberculosis in 1882 by Prof. R. Koch gave a new interest to the disease. While this discovery shattered most of the previously held theories, Prof. Koch's work was so thorough that

it did not admit of contradiction. Since that time the entire subject has been reconsidered, and, with the new impulse given by the discovery, the subject has been investigated as it never could have been before. Much that was old has been discarded and much that is new has been revealed.

Of all the revelations made, that which is of greatest importance and which is fraught with the greatest good to the human race is the fact, which has been established beyond peradventure, that tuberculosis is a curable disease. But this idea is not new. Hippocrates said: "Phthisis, if treated early enough, gets well." These recent investigations, however, have served the purpose of bringing this fact before the modern profession and of impressing it upon them. Growing out of these investigations has come the organized effort to stamp out the disease. Tuberculosis congresses have been held. Public and private aid has been solicited, sanatoria have been constructed, laws enforcing care upon the part of those afflicted have been passed, pamphlets giving general information for the public have been circulated, and a general effort on the part of the medical profession is being made whereby they may learn to diagnose the disease in its early stages, and whereby they may be able to cure the disease when recognized.

That the profession is changing its attitude toward tuberculosis is very evident to a casual observer, and this change is becoming more evident every year. When the writer was a student in 1893, he heard an able teacher dismiss the treatment of tuberculosis with the following: "What shall be done for these unfortunates? In the early stages, cod-liver oil. In the late stages, morphia." Fortunately for these unfortunates, able teachers are learning better. They know that a tuberculous patient is not doomed. Prof. Brouardel,[1] before the recent London Tuberculosis Congress, made the following statement: "Phthisis, therefore, is curable, even in its most advanced stages. This is not only maintained by anatomopathologists, but by all medical men who have made a special study of the disease." He then quotes Grancher, approvingly, who says: "Tuberculosis is the most easily cured of chronic diseases."

If tuberculosis be curable, why is it allowed to reap annually such vast harvests? In the first place it is due to the conservatism of the medical profession, which is very slow to recognize the results of those who are curing tuberculous patients. In the second place the laity takes a hopeless view of the disease. Both medical opinion and public opinion must be changed and the truth must be heralded forth that there are help and hope for the tuberculous.

The first and most important consideration in the cure of tuberculosis is early treatment. Experience shows that of incipient cases the vast majority will get well under proper treatment. Turhan[2] of Davis says that 97 per cent. of his early cases should be permanently cured, while only 17 per cent. of the later stages show hope. Trudeau[3] shows 300 cases of incipient tuberculoses of which 68 per cent. were cured, while of 900 advanced cases only 11 per cent. were cured. Von Ruck,[4] in a series of 73 incipient cases, shows 94.5 per cent. cured. Such statistics are in accord with those of other observers and are eloquent in their appeal for early diagnosis and treatment. If 75 per cent. of incipient cases can be cured (and we believe this a very low estimate) should we not strive to bring our patients under proper treatment at the favorable time and save these precious lives?

While the aim should be to treat the patient in the early stage, it must not be forgotten that much can be done for those advanced in the disease. Quite a percentage of cures are reported among second-stage cases, while it is not at all uncommon to see third-stage cases recover. When a cure is not effected, oftentimes the patient is so improved that his life is prolonged for years. A report[5] from all the sanatoria of Germany which has been recently published shows that nearly all cases can be improved. Of 6,108 cases 87.7 per cent. were either cured or improved. These results were obtained in patients two-thirds of whom were beyond the first stage.

Fortunately for the afflicted, we have to-day means at our command which make it unnecessary to wait for baccilli to appear in the sputum in order to make a diagnosis of tuberculosis. Just a few years ago we rejoiced because we could confirm a diagnosis of tuberculosis by the microscope when the lung contained evidences of consolidation and cavity formation, when the patient was pouring out baccillus-laden sputum in large quantities, and when clinical symptoms and physical examination should have made the diagnosis certain; but now clinical observations and pathological studies have furnished us with so complete a picture of incipient tuberculosis that we can recognize it in a large percentage of cases simply by physical examination and by the clinical history. However, it is fortunate, if we are not able thus to detect it, that we have other means which will confirm or disprove our diagnosis. I refer to the tuberculin test.

That the value of the tuberculin test has not been recognized is due to the same prejudice which has blinded the profession to its value as a therapeutic agent. The tuberculin test is safe and reliable, and there is no reason why any man who is fitted to handle such remedies as morphine or strychine is not capable of administering it. Heron,[6] in his address before the London Tuberculosis Congress, said: "I am strongly of the opinion that it (the tuberculin test) is at least as safe as is any other very potent drug." Prof. Koch[7] has observed over 3,000 cases in which the test was made and concludes that its reliability is almost absolute. He has never seen disadvantageous effects follow its use when administered as he directed. Prof. Osler[8] says that tuberculin in his experience is harmless and that it is used as a routine diagnostic agent in the

Johns Hopkins Hospital. Trudeau,[9] one of our best and most conservative men in the line of phthisiotherapy, says of the tuberculin test: "In my experience it has proved generally reliable and free from any ill-effects, and has many times enabled me to insist on prompt and radical measures of treatment months before a conclusion as to the nature of the disease could have been reached by the usual methods."

It is to be hoped that the medical profession will acquaint itself with the tuberculin test and employ it in all doubtful cases, and thus give those afflicted with tuberculosis the advantage of an early diagnosis, which means an almost certain cure provided the proper treatment is instituted. The first indication in the treatment of tuberculosis, which is early diagnosis, will be met when the profession has learned the value of this test.

If the diagnosis be made in this most favorable period, before bacilli have appeared in the sputum, the battle is half won. But whether made then or later a strict course of treatment should be immediately instituted. *It must be remembered that the tuberculous patient is a sick man, whether he has cavities in the lung and his vitality has been sapped by prolonged absorption, or whether he is in the incipient stage with a small cup of tubercles in one apex, a slight loss of vitality and an elevated temperature of one-half to one degree. The patient who has lost one-third of his body weight, whose cheek is flushed from hectic fever and whose strength is so nearly gone that the least exertion tires him, was once in the incipient stage, and the chances are that, had his disease been discovered at that time and had proper treatment been instituted, he would have been cured and saved this prolonged suffering and rescued from impending death.*

A tuberculous patient is as sick as a man with typhoid or pneumonia, but he does not know it. His chances of living are far less, because he does not feel ill, while typhoid and pneumonia patients are seen to take to their beds and place themselves under proper supervision. It may be difficult to make those in the incipient stage of the disease believe that they are ill, but the argument is all on one side, and a physician is nothing unless he can surmount difficulties. We must throw away all such expressions as "weak spot in the lung," "throat trouble" and "bronchial tubes affected." *Instead of making light of incipient tuberculosis and allowing the patient to fritter away his chance of recovery, we must institute curative treatment. Instead of ignorantly carrying the patient to the grave, we must guide him intelligently to health and life.* The criminal is just as much doomed when the sentence has been passed as if the rope were around his neck, although he may not feel any differently than during trial; so the tuberculous patient is just as ill in the incipient stage as he is when death is approaching; and, as the time to seek clemency for the doomed man is as soon as the sentence is passed, so the time to seek health for the tuberculous is as soon as the disease has begun.

The treatment of tuberculosis is the treatment of the individual. Routine can be followed so far, but for best results we must individualize. In all cases we have two factors to deal with—the individual constitution and the disease. The latter can be combated with the same remedies in most cases; but the former must be treated entirely according to the case.

For the treatment of the disease itself many things have been brought forth as specifics; but one by one they have given way before the weight of medical opinion until the profession has almost lost hope of ever finding such a boon. Anything that is mentioned as having a specific action in the treatment of the disease is tabooed before it is announced. It is given either a half-hearted trial or no trial at all and is then cast aside among the "forgotten."

The culture products have been struggling against this doubt and hostility for ten years; yet it is the opinion of all of those who have given them an extended trial that they do have a specific action, which warrants their use. It is a noteworthy fact that the number of men who are using them is increasing every year.

While I do not wish to enter into a full discussion of culture products, having done this in a previous paper,[10] I wish to state two reasons which, to my mind, establish them as specifics and call for their employment in cases of tuberculosis. First, they stimulate tuberculous tissue to repair, showing a selective action upon it, which may be observed in visible tuberculous lesions or may readily be detected by the stethoscope when the seat of the disease is in the lungs. Second, they produce an immunity. This is demonstrated by the fact that, while the great tendency of the disease is to extend along its borders, cases treated by these products rarely show such extensions. There is also a general immunity conveyed which protects the patient from relapses and which alone justifies the use of these remedies even if they were utterly worthless in all other particulars.

For these reasons, which I have demonstrated many times in my practice, I believe that culture products should be used in the treatment of tuberculosis as the means of combating the tuberculous foci.

This, however, as I said, is only a part of the treatment. The individual must be treated. Here routine is not permissible, but every idiosyncrasy and every characteristic of the patient must be considered. One has this complicating disease, another has that; this man has business worries, another has family troubles; this man needs encouragement, another must always be held in check. All these things must receive the physician's attention that he may put his patient in a condition which will best further his recovery. These measures are aimed at increasing the recuperative and resisting powers.

The tuberculous patient requires few drugs.

All that have a tendency to interfere with digestion should be avoided. The patient's stomach is to him what the boiler is to the engine and must be guarded with zealous care. Instead of drugs the employment of the natural remedies, such as water, air, rest and carefully-regulated exercise, will suffice in most cases. When remedies from the Pharmacopœia are needed, use them of course, but the hope of curing tuberculosis by the administration of drugs is not only fruitless, but in many cases injurious.

The thing that worries the patient most, as a rule, is the cough, and the indiscriminate use of cough mixtures in the early days of treatment has ruined the stomachs of many patients, rendered their illness much harder to bear and in many instances hastened the end. This symptom can be combated, as a rule, by other means. In the first place it should be determined as nearly as possible what is causing the cough. Is it due to a congestion of the lungs from overexertion? If so, prescribe rest. If it be due to pharyngitis, laryngitis or tracheitis, relieve it by the proper local applications, intratrachial injection, nebulæ, and sprays. If it be a nervous cough the patient should repress it. If it be due to the accumulation of mucus in the bronchial tubes, this must be coughed up, but we should do all in our power by the proper management of the case to relieve all local catarrhal irritations and to assist Nature in healing up cavities so that this may be avoided. When these measures are adopted the need for cough mixtures will be rarely felt. It is a common experience with me to see patients who come complaining of severe and protracted coughing spells freed from their distress when their lives are so regulated that they cease to cause local congestions by constant overexertion and when the upper air-passages are relieved of sources of irritation. So important is it to relieve patients from all sources of cough that the upper air-passages should receive the constant care of the physician during the entire period of treatment. While one may not be able to apply antiseptics in the form of nebulæ and sprays in sufficient strength to destroy bacilli, and while such treatment must not be considered as having a direct action upon the tuberculous foci, nevertheless it should be carried out as a measure for giving comfort to the patient and indirectly to aid in recovery by relieving cough and thus sparing the patient useless and unnecessary fatigue.

It is not my purpose to outline in detail any line of treatment, for each case must be treated individually. When the disease is discovered, the question to decide is, What can best be done to increase the resisting powers of the patient and what can be done to attack the disease? When the physician has once determined upon his course he should demand absolute obedience on the part of the patient. I find this obedience is not hard to secure in most cases, if one will only take a little time and explain to his patient *why* he wishes him to do the thing asked. The best patient is the intelligent patient, and he stands ready in most cases to coöperate with his physician.

If the investigations on the subject of tuberculosis during the past few years carry any message to the medical medical profession in this, the beginning of the new century, it is this: "Tuberculosis is both a preventable and a curable disease and it demands the intelligence of the medical profession to cure those afflicted and to save the healthy from infection."

The tuberculous patient must be treated. No greater error can be committed than to turn these unfortunates away to shift for themselves. So often patients come to the great sanitarium of the Southwest with the advice from their home physician: "Let medicine alone, stay out-of-doors and rough it; take all the exercise you can." What is the result? The patient comes to a new climate of which he is totally ignorant. He is buoyed up by the change of air and the hope of getting well and, remembering his physician's faulty advice, commits one indiscretion after another, overexerts himself and soon weakens his constitution and ruins his chances of recovery. Or being among strangers, he becomes homesick, loses appetite and weight and counteracts all the good that the most perfect climate could do. Those most experienced in the treatment of tuberculosis are almost a unit on the point that a tuberculous patient is better off with intelligent treatment in a bad climate than with the best climate without such guidance. Upon this point, I quote Yeo.[11] "The patient, if left to his own devices, may make bad use of a good climate, while with skilful guidance in a sanatorium he may make good use of a bad one. *Care without climate is better than climate without care.*"

Those physicians who do not practise in our health resorts hear of wonderful cures of patients who "stayed in the open air, took all the exercise they could or who roughed it." We, too, see those cases. They get well in spite of themselves and are more of an argument in favor of the curability of the disease than of the method of curing it. For every one who is thus cured there are many who fall victims to their foolishness who could be cured by intelligent treatment. Every one of these cures encourages us in our fight against the great destroyer. With a united effort on the part of the medical profession there is no reason why this, the greatest enemy of the human race, could not be shorn of its power.

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THE SMALLPOX PROBLEM.

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CONNECTED with the problem of how best to treat smallpox, there is an unknown equation which cannot be resolved with algebraic accuracy; it is not capable of such evidence as relates to mathematics, for if we subject the question to a rigid investigation, we immediately perceive the immense difficulties of attaining such results as sanitary science can sanction and adopt. It is beset with difficulties on all sides, surrounded by conditions that are injurious, and results in issues that are dangerous tending to interrupt the possibilities of relief.

The special obstacles confronting the investigator and the most important data bearing upon the subject are as follows:

1. The extreme and continued ignorance of the public generally respecting the disease and the means which modify and remove it, as well as in regard to vaccination.

2. The injurious interference of antivaccination, Christian Science and vaccinophobia due to ignorance, dishonesty and insanity, and certain to disturb, obstruct and overwhelm the normal order of prevention and safety.

3. Ignorance respecting the efficacy of isolation, quarantine and disinfection or a lack of appreciation of their preventative value; also allowing the anxieties, wishes, hopes, fears or other natural emotions of the patient or his friends to be paramount.

4. The misconceptions and misappreciations of the members of the medical profession of the importance of the principles advanced by sanitation, also the established fact that many are wonderfully slow in recognizing the real nature of the disease.

5. The lack of uniformity in sanitary laws and the indifference shown by many authorities in their enforcement.

6. The employment and countenance of physicians as health officers who, for political reasons, have obtained the reputation of greater activity and boldness through their very ignorance of the true character and indispensable requirements of sanitation.

It is obvious, therefore, that to obtain a field wherein to try this question of "how best to treat smallpox" we must go beyond the limits of ordinary practice and a mere text-book training.

The first obstacle in the path of prophylaxis, impending the attainment of the truth in regard to this disease, lies in the circumstance that the masses are lamentably ignorant of the measures necessary for its prevention. Even the extent of ignorance prevalent among the better educated classes is something remarkable. Knowing absolutely nothing about the principles upon which the practice of vaccination is founded, they are recklessly and shamefully negligent in applying this inestimable method which gives immunity from smallpox. Just as a right education is a prevention of crime, and far cheaper than the machinery for its detection and punishment, so is vaccination a prevention of smallpox, and cheaper than the appliances for its cure.

However favorably the sanitarian may look on vaccination, the lay public fears certain dangers in connection with it. First, it apprehends the transmission of other diatheses, such as scrofula, tuberculosis, syphilis, gout, rheumatism and bovine diseases. Secondly, because difficult of comprehension, it is coolly disregarded. The means contemplated to convey more correct views of the relation of vaccination to smallpox will be facilitated, and the hands of the sanitarian strengthened by educating the people concerning these prepossessions and prejudices. The community should be afforded opportunity to become acquainted with the usual or special causes operating to prevent it. The approach of an epidemic would then be at once known and could be speedily antagonized.

Then the want of power to weed out the various "antis" and the deluded obstructionists is much to be lamented, as prophylaxis will cease to be empirical only when the proper amount of knowledge shall be fully obtained by the laity.

There is, perhaps, nothing that has so long kept in abeyance the point at issue, or contributed to throw discredit on the idea of protection connected with vaccination, than the opposition to compulsory measures. The fundamental evil of the energetic and meddling practice of the "antis" is that, while not possessing in itself any power of checking or mitigating the pathological processes, it interferes with Spencer's law of equal freedom It is a game of bluff, the mischievous practice of the fanatic and demagogue who is ever ready to utter the cry of infringement of personal liberty. In their blind devotion to their visionary hypothesis, they overlook the most positive means of preventing smallpox. Like the witches and impostors of old that have always held competition with physicians, they care nothing for the safety and health of the public, but are continually striving to induce it to swallow falsities for facts. Let those who oppose vaccination as an infringement of personal rights answer these questions: Why not rob, murder, or cause the lesser outrages of the ten commandments? Why enforce compulsory education and poor laws? The point need not be argued that, as a necessary consequence of the existence of smallpox, since life, property and liberty are indispensable to equal freedom, the State in some form should protect the health of its individual members, for one of the commonest and most imperious instincts of our nature impels us to avoid impending suffering and to escape from it if already upon us.

The sin of neglect is unpardonable, as the Lord has ordained exact laws for the selection of preventative measures to stay disease. The time has come to dispense with hypothesis and theory. In sanitation, the ultimate appeal must be to facts which true science has discovered, arranged, combined and rendered unanswerable. It is a merciful work to clear away the gross perversions of mock science, even when hid under the

appearance of religion. As Dr. J. M. Toner so aptly puts it, "Parents and guardians have no more right to withhold or neglect to provide vaccination for the children under their protection than they have to jeopardize the lives of these helpless infants by not furnishing them with food and clothing. It is criminal to neglect either, as death may be the consequence; but the failure to provide protection against smallpox seems to be more maliciously wicked than to neglect either food or clothing, as the former may not only cause the death of the child, but be the means of spreading disease and death among many others; while the evil which arises from the latter ceases with the death of the victim."

Another agency that adds to the dissemination of this loathsome disease is that of the careless practitioner and incompetent health official who are frequently called upon to diagnose some suspicious skin manifestation, which may or may not have caused sudden alarm in the community, to decide whether that danger signal be well or ill founded and whether the affection is or is not smallpox. It is not too much to say that a professional reputation is at stake, for it may be seriously marred if subsequent events prove such an opinion to have been inaccurate.

Again, errors are constantly committed by medical men in coming to their conclusions, as the ordinary mind cannot rise above its limitations. Thus, we have ignorant, reckless and dishonest practitioners who, from one cause or another, such as inexperience, indolence, indifference, or deception, place a false value upon things of life in their attitude toward the seriousness of the matter in hand. Further, to increase the disastrous blunders of this clan, one need only include a disqualified health official who, perhaps, from a sympathetic interest in their short-comings, has been inaugurated into office through the avenues of patronage. It would appear, from the number of cases of smallpox universally prevalent throughout this country, that an instructor on sanitation ought to be sent among this class to open the way to medical civilization. I believe that the prevention of contagious diseases can only be brought about through the conclusions of a long and careful experience, directed and enlightened by an independent spirit and held in check by that philosophical scepticism which is so rare, but is essential to all correct scientific investigation.

Another difficulty connected with this question is the lack of qualifications in our health officials, which certainly are not always commensurate with their duties and responsibilities. The most obvious cause leading to this result is this: The defect existing in almost all of our medical schools in having no distinct chair for instruction in sanitary science, and the consequent neglect of it, or very inadequate attention given to it by the professors of some other department in whose courses alone any consideration of it could be expected. The establishment of such a chair in every university, college and high school is a crying necessity.

Sanitary knowledge, if instilled into the mind in the early part of the student's career, would act as a perpetual and ever-ready help to clear up many of the greatest obscurities of sanitation and enable him to avoid much of the deceptive logic, and many of the false conclusions which are inseparable from ignorance of premises essential to diagnostic investigation. Without such instruction in his early progress to enable him to find the right way, it is no wonder that his subsequent career should be beset by doubt and error.

The legitimate vocation of the physician is to mitigate or cure diseases; that of the sanitarian is to prevent them. The comparative power of the former with the latter to save life appears to be very circumscribed. The practitioner possessing no other means of combating diseases but the feeble and uncertain armory of drugs must look up for consolation in his difficulties, in his blind gropings, and amid the insignificant or dubious results of his labors, to sanitation. It should be a comfort for him to know with certainty that any disease that is communicable is preventable. It leaves no room for doubt as to its vast powers, or as to the incalculable good worked by these in the cause of humanity. The advent of such a desirable revolution as the establishment of a department of preventative medicine is clearly indicated, and the question is destined through its very indispensability to receive proper consideration in the near future.

It should be made indispensable that health officers qualify by a course of study in sanitation before being eligible to office. The necessity of such a course is apparent, for, owing to the want of proper qualifications in these officials who furnish the vital statistics which incite and direct sanitary activity, much has been left undone and much accomplished that has not been creditable. The privilege of naming the health officer and of selecting his subordinates should be denied the political boss. The selection should be guided by knowledge, not by ignorance such as contemplating a reduction in the death-rate of preventable diseases, and it always keeps in view the comfort and happiness of society. The health official should find, moreover, a perennial and lively stimulus to exertion in the hope that the time may yet come when the epidemic visitations of such diseases as smallpox, typhoid fever, cholera, and pestilential diseases in general shall become a matter of history. Such consummation is, no doubt, remote, but it is no less sure. The diagnosis of well-developed smallpox is not necessarily difficult, but in an epidemic where the variolous contagion presents itself in such a variety of forms, only a few of which are remarkable for their severity while the majority are noted for their exceeding mildness, it is not strange that mistakes have hitherto been made, while it is impossible to give an absolute opinion before the appearance of the eruption; and even at the first appearance of the papules no one should be blamed for being in doubt as to whether he has to deal with a papular erythema or a papular form of measles. Epidemics that have features of inter-

mediate forms have not been of common occurrence. With mildness of prodromes, scarcity of eruption, and the appearance of the disease in successive crops, with brevity of duration and a lack of distinctness in the characteristic developments, a likeness to chickenpox is presented that demands cautious and conservative procedure in diagnosis.

Instability and variation have been characteristics of the present epidemic, in contradistinction to the fixedness and permanency of previous ones. With these difficulties before the physician who is conversant with smallpox only through text-book description, it is not to be wondered at that serious errors have occurred.

We may state from observations that have not been limited to characteristic cases that the distinctions to be noted are not as to the phenomena of the whole, but particularly as to mode and degree of expression. For the purpose of fixing with certainty the points of differential diagnosis and, in an equal degree, in order to determine a principle of treatment, the physician should endeavor to show not only the dissimilarity existing between these two morbid affections of the skin, but their analogy as well. Recently the inexperienced have frequently mistaken the vesicular summit of the smallpox papule in its slow growth, prompt suppuration, and fibroid degeneration for the true vesicle of chickenpox which necessitates no such nice observation. It is not of doubtful appearance; its superficial seat and transparency are perfectly appreciable to the eye, requiring no rigid examination, no exploration of the needle or lens. The careless have overlooked the fact that an epidemic eruptive disease attacking children and adults alike cannot be chickenpox. After the prompt recognition and bold announcement of infection from smallpox should come our ability to cope with it practically and successfully.

It is evident that success in this matter necessarily depends on an enlightened system of isolation, quarantine and disinfection, based upon a thorough understanding of the origin and transmission of the disease, the duration of isolation and quarantine to be regulated by the period of incubation and the period of infection. The enforcement of these regulations should be accomplished by members of the police department rather than by doctors or sanitary inspectors. The orders should emanate from a central authority and their execution should be prompt.

Isolation, to be effective under ordinary circumstances, cannot be accomplished at home, owing to the reluctance of the afflicted families to maintain it. To prevent its spread to other individuals or to the community generally, the patient should, therefore, be immediately removed to a suitable hospital, no distinction being made between pauper and non-pauper cases. As mainly from ignorance and superstition a large portion of the afflicted population refuse to enter a hospital or to be vaccinated or isolated, such objections must be promptly grappled with by the strong arm of civil law.

The saving of life in case of the decisive execution of proper sanitary laws would not only materially modify our tables of mortality, but benignantly affect the fortunes of nations. In order to secure the full benefit from isolation, it is necessary to impose a period of quarantine, regulated by the duration of the incubation stage, in cases of all those previously coming in contact with the affected person. It is obvious that, unless this precaution be observed, the object aimed at, namely, the stamping out of the disease, may be defeated, for others by whom the poison may be disseminated broadcast may already have contracted it. Of the potency of quarantine to strike at the root of this troublesome malady and thereby to save life without the penalty of previous suffering, there can be no doubt. If the attention of society were fully given to the subject, an ample compensation for all labor attending investigation would be found in the proportionate development of the department of preventive medicine.

Of course, to carry out the hygienic processes to their possible and practical extent, we must likewise disinfect. The following are the essential conditions of a true disinfectant: (1) It must be capable of killing germs and their spores; (2) it must be applied to every part; (3) in sufficient strength; and (4) for a sufficient time. These conditions have been established by experiment—the only safe method of arriving at a conclusion—and until all are complied with the danger it not averted.

In the treatment of smallpox, vaccination, isolation, quarantine, and disinfection must always be admitted to exhibit the least equivocal successes and to assume the most splendid triumphs of the medical art.

How best to secure protection from the ravages of smallpox, or from any pestilential disease, must continue for some time to engage the attention not only of sanitarians but of medical men throughout the country. The rapid progress which popular sanitation is making in some of the States of the Union is a subject for hearty congratulation among ourselves and a cause for devout gratitude to Heaven. The tendency of the times, necessitated by the testimony and experience of history, is toward centralization, uniformity and simplicity. This is exemplified in National policy and commercial combinations. Interstate laws have been recognized necessary in fields too numerous to mention here, while the discussion of many others is constantly going on with the purpose of securing other benignant and effectual results. The one great need of the present time is the uniformity of laws relating to health, particularly to contagious diseases. The rapid means of transit at the present day, the interstate and international commerce and travel which exist and will continue to increase, must necessarily, from the nature of things, lead to epidemic visitations of such violent diseases as cholera, yellow fever and smallpox, unless some organized system and well-reorganized legal en-

actments are authoritatively interposed for general protection.

Sanitary laws, now beginning to be more properly interpreted by an enlightened public, testify to the fact that sanitary science has no country and comprehends no boundary—it is for the world at large. The difference in the requirements of the different States causes inefficiency, difficulty, expense, trouble and evasion. The most careful and protective laws and procedures in one section may be impaired most seriously by the reverse conditions existing in an adjacent State, county or city. With a uniform sanitary system and laws throughout the country, aggressive action could be maintained, the public educated, and the dire results of many epidemics avoided. How much more efficient in such a case would all our methods for the treatment of smallpox become; for with varying requirements, indifferent vaccination, and lack of quarantine, isolation and disinfection, its management cannot be made either efficient or effective.

There are among us thousands of persons whose once darkened minds have been so illuminated with wisdom on this subject as to beget an intolerable impatience under old imperfections. May their number increase, until anything less than a uniform and universal sanitary code shall be impossible.

MEDICAL PROGRESS.

PEDIATRICS.

Elimination of Iodides in the Milk.—The iodides introduced into the organism in the form of a solution in oil and by means of intermuscular injections are eliminated by two routes, the milk and the urine. According to M. FLAMINI (Revue Mens. des Maladies de l'Enfance, Mar., 1902) the percentage of the iodides in the milk is about half of that which appears in the urine. The quantity of iodides in the milk increases with the increase of the dose; it also increases with the degree of saturation of the animal, from which fact appears the necessity of carrying the administration of the iodide to the point of saturation in order to obtain a desirable amount of iodide in the milk. The maximum quantity of iodide recovered by the author from milk, amounting to 0.12 gram per liter, obtained by means of quite small doses, leads him to believe that by means of the augmentation of these doses it is possible to obtain in the milk sufficient iodide for therapeutic purposes. The intervals between the injections can be regulated so as to secure a uniform percentage of iodide in the milk each day. More than half of the iodide in the milk is dissolved in the serum, and the remainder is in combination with the proteids. Part of the iodide in solution in the serum is also in organic combination. The administration of iodide, as described, and for a long time, produces no injurious effect on the composition of the milk. The animal thus treated presents neither general nor local reaction, and stands perfectly well the drug injected.

Primary Infantile Atrophy.—The discussion of the causation of this obscure condition of infancy, with reference to the recently discovered soluble ferments in maternal milk, is the task pursued by L. CONCETTI (Archives de Médecine des Enfants, Mch., 1902). It is necessary to distinguish two types of infantile atrophy, primary and secondary. The latter is the more common form and is to be attributed to either insufficient food or food badly adapted to the infant. According to the author, the picture of true primary atrophy is afforded by those children who, on account of an innate defect in their organism, find themselves unable to profit by an alimentation quite in conformity with the rules of physiology and hygiene. To profit by a food, two acts are necessary, digestion and assimilation. True primary infantile atrophy may result from a defect in the former, corresponding to a disproportion between the demands of an exactly physiological food and the directive activities of the digestive ferments. A defect in the act of assimilation may result in primary infantile atrophy, which defect manifests itself in a disproportion between the elementary principles absorbed in the intestine and circulating in the blood and tissues, and the biological activities (assimilatory ferments) by which they can be transformed into living cellular protoplasm. It is generally known that in infants the activity of the digestive enzymes is much less than that in the adult. The amyolytic ferment is found in appreciable quantities only in the fifth or sixth month of life. In the first few months lipase is capable of splitting finely emulsified fats; but it has no effect on fats that arrive in the intestine in the form of large drops, which are passed out of the intestine, the condition being recognized as a "fat diarrhea." The fact that certain infants cannot digest milk is to be attributed to a congenital defect in the production of the digestive ferments, and a retardation in the development of glandular activity in the intestine. Recently several investigators have demonstrated the presence in woman's milk of certain digestive enzymes, which in the case of cow's and goat's milk are of a different nature and of an activity and proportion much less than those in woman's milk. These enzymes, which are supposed to supplement the action of those in the gastro-enteric canal of the infant, are destroyed at a temperature of 70° C. From this point of view, the sterilization of milk cannot fail to vitiate the conditions of artificial alimentation, above all for certain infants. Clinical experience has demonstrated this. It has also shown that asses' milk most nearly approaches the human. This is borne out by chemical analysis, for from the point of view of the digestive ferments contained in it, asses' milk occupies a middle place between human and cow's milk. In the same way as the production of the digestive ferments is reduced in infants, the trophozymases, or enzymes that preside over the assimilation of the digested products into living protoplasm, by a natural and analogical law, would be less developed in the infant than in the adult. Moreover, there are certain conditions that retard or render inactive the production of these enzymes. Among these are prematurity in the infant and the following conditions in the parents: Syphilis, tuberculosis, youth and old age, consanguinity and the neuropathic constitution. There are also certain morbid states in the early months of life, above all infectious diseases and infections from the gastro-intestinal canal, that have a pernicious influence on the development of the trophozymases, as the result of which the infant falls rapidly into a condition of marasmus. The failure in the trophozymases may go hand in hand with failure in the digestive variety, or the latter may be normal while the former may be diminished or defective. In certain congenitally syphilitic and tuberculous infants, pronounced constitutional atrophy is frequently observed in spite of the presence of a great voracity of appetite, and in spite of the perfect functioning of the digestive ferments. These cases of syphilis and tuberculosis, even when exceptionally they can tolerate it from the standpoint of the digestion, fall sooner or later into atrophy under the influence of

artificial alimentation. The trophozymases are elaborated in the organism of the mother and excreted in the milk. Analogous to this is the elimination of toxins and antitoxins, agglutinins, alexins, and certain injurious substances produced during menstruation and under the influence of violent emotions. In the milk of cows and goats, the trophozymases are found in smaller quantity than in that of human beings, reasoning by analogy from the relative differences in the case of the digestive ferments. Moreover, the trophozymases of one animal are not the same as those of another. This shows the superiority of maternal feeding over artificial alimentation. The fact that heating to 70° C. destroys the activity of these ferments explains the phenomenon that has long been observed but not understood, namely, that infants thrive better on unboiled than on boiled milk, provided, however, that the milk is fresh. It has been found, at least in the case of certain of the digestive ferments, that the zymases are not specific in woman's milk, but may be made to appear in cow's and goat's milk at will by changing the character of the animal's food, and, what is of greater importance from the practical standpoint, by feeding the animal upon the ferments which one may desire to have appear in its milk.

Benign Hemorrhagic Scarlatina.—When hemorrhages of various kinds occur in the course of scarlatina, the case is usually recognized as one of malignant type. BOUYER (Archives de Médecine des Enfants, Jan., 1902) reports a case of scarlet fever accompanied by considerable hematuria, petecchiæ upon the trunk and lips, and severe epistaxis, in a child four and a half years of age. The hemorrhages decreased and finally disappeared, and at the end of three weeks the cure was complete. In view of the universally fatal character of cases of hemorrhagic scarlatina, the author surmises that probably the hemorrhages occurring in this case are to be attributed not only to the scarlet fever, but also to a hemophilic tendency, shown also during an attack of measles when the same child was three years old by severe epistaxis.

Heart Disease in Children.—It is generally admitted that the prognosis for heart disease in children is, on the whole, unfavorable. W. MACKENZIE (Intercolonial Med. Jour., Feb. 20, 1902) endeavors to show the importance of a healthy heredity. He believes that pericarditis and not endocarditis is the common lesion found in pure rheumatic hearts. In syphilitic patients, however, the endocardium, never the pericardium, was affected. In any child showing symptoms of early and rapid heart failure after the initial endocardial attack, lues must be suspected. Dropsy is not seen in the early failures of rheumatic cases, but it is characteristic of syphilitic patients and, if the child live long enough, it is probably largely due to syphilitic arteritis. It is usually irresponsive to treatment and frequently ushers in the end.

Infantile Convulsions.—Infantile convulsions may be divided into two main groups, symptomatic convulsions due to disease of the central nervous system (meningo-encephalitis, tumors, hemorrhages, etc.), and idiopathic or essential. The latter group includes three main forms, external convulsions (eclampsia), internal convulsions (spasm of the glottis), contractions of the extremities (tetany). The idiopathic forms were studied as to etiology and symptomatology by PROF. D'ESPINE (La Méd. Moderne, Apl. 9, 1902). **Heredity** plays an important part in causation. The influence of rickets is that of an auto-intoxication. Dentition is of no importance. In the newborn convulsions are usually due to organic lesion and the prognosis is grave. Often asphyxia is a cause, and is due to congenital cyanosis, whooping-cough, bronchopneumonia. Many cases are attributed to poisoning by lead, alcohol, opium, santonin, etc. The most frequent cause is auto-intoxication (uremia, athyroidism, hypertrophy of the thymus, gastro-intestinal disease). Reflex eclampsia may be due to irritation of the skin, ears or digestive tract. Clinically, eclampsia in infants is preceded by a stage of hyperexcitability of the nervous centers, manifested by hyperesthesia, exaggerated reflexes, electrical hyperexcitability. As to form, the convulsion is neither purely tonic nor clonic; exceptionally a purely tonic convulsion may occur. Commonly the spasm begins at the eyeball, extending to the face, neck, extremities and trunk; if localized, the face is usually the part involved. Bilateral symmetry is the rule; exceptionally the spasm is exaggerated on one side. Spasm of the glottis is characterized by a series of inspiratory or expiratory sounds; the paroxysm may end fatally by syncope, but typical cases are described which were saved by tracheotomy or by intubation. Spasm of the glottis is characteristically a disease of the first year of life; more than 50 per cent. of all cases occur during the first six months. Compared with general convulsions or with spasm of the glottis, tetany is a rare condition. In 10,000 infants, tetany occurs 6 times; spasm of the glottis, 31 times, eclampsia, 61 times.

Modification of Breast-milk by Diet and Hygiene.—Many physicians as well as mothers are willing to substitute modified cow's milk for mother's milk, even when only slight obstacles seem to make feeding from the breast difficult. No doubt the larger part of the responsibility for this unfortunate change rests at the door of the physician who does not sufficiently impress the mother with the dangers which are sure to arise. T. S. SOUTHWORTH (Med. Rec., Apr. 26, 1902) believes that, with persistence and careful attention to the regulation of the mother's food and her mode of life, the ordinary, difficult problems may be overcome. An analysis of the breast-milk will oftentimes at once suggest the proper method to be pursued. He cites several instances in which, after several weeks of fruitless endeavors by the family to make a child thrive upon breast-milk, he has so regulated the mother's food, exercise and bodily functions, and so trained the child in the regularity of its feeding, that after a few days of worriment and uneasiness the final results have been most satisfactory. The danger during the summer to bottle-fed babies is so great that every endeavor should be made to give them the advantage of mother's milk.

Summer Diarrhea.—A valuable experience is obtained in the treatment of this condition in the dispensaries of this city and C. G. KERLEY (N. Y. Med. Jour., Apr. 26, 1902) details the methods which are followed by him in several hundred cases each year. Milk is positively interdicted and not allowed until the stools approximate the normal, which may mean from forty-eight hours to several weeks. The most suitable and safest substitute has been the use of cereal waters and gruels. Barley is generally employed, sometimes rice. Two tablespoonfuls of Robinson's barley-flour are added to a pint of water and boiled twenty minutes and water is added so that one pint remains. Rice water may be similarly prepared, but must be boiled three hours. Beef, mutton or chicken-broth may be added to the barley-water in the proportion of one of the former to two or three ounces of the latter. Frequent changes are always welcomed. Brandy or whisky should seldom be given. Boiled water is frequently administered in small doses. Fever is relieved by sponging with water at from 86° F. to 90° F. Small divided doses of calomel or castor oil are always given at the beginning. Bismuth subnitrate must be used in large doses to be of any value. Ten grains every two hours are usually given regardless of the age of the patient. The indications for opium are pain, tenesmus and frequent stools, but a moderate

diarrhea should never be controlled by this drug. In regard to the irrigation of the colon benefit is derived only in those cases in which there is something to be removed. A moderate number of green, mucous stools, with or without blood, will be benefited by an irrigation of simple saline solution. If there be fever the solution may be used as cold as 50 to 70° F., but if marked prostration and a subnormal temperature exist the solution may be 110° F. The elimination of severe cases depends largely upon the education of the mother, who should be taught to stop the milk and give barley-water and castor oil as soon as an evidence of derangement appears.

SURGERY.

Surgery of the Prostate.—After a complete résumé of the subject and a discussion of the older methods of treatment, J. B. DEAVER (Phil. Med. Jour., Apr. 19, 1902) urges that in suitable cases a radical prostectomy be done by the perineal route and that it be done early before. periprostatitis has made the operation difficult and prolonged sepsis from cystitis and pyelitis have rendered the patient unfit for major surgical procedures. He reports five cases, with two deaths in patients who had been operated on "in extremis." The other cases presented the usual symptoms of frequent and later painful micturition, with retention, cystitis, and signs of an enlarged prostate. Through a median perineal incision, the gland was dissected free and enucleated; a soft catheter was then introduced into the bladder through the prostatic urethra, and the capsule lightly packed with gauze. Healing was prompt; in one case the fistula closed in fifteen days and the patient had perfect vesical control. In a second case, urine escaped from both openings forty days after operation, with only slight control, but the fistula was closing. In the third case the sinus was closing at the end of twenty days and but little urine passed by the urethra.

Ethyl Chloride as a General Anesthetic.—From an experience of its employment in over one hundred cases F. H. ROSE (Bristol Med.-chir Jour., Mch., 1902) highly recommends this anesthetic for brief operations, especially those about the nose and throat, for dental work, and for the removal of tonsils and adenoids. It was found to be safer than nitrous oxide, with a longer period of anesthesia and more complete analgesia. Recovery is rapid and no after-effects are felt. The author found no disturbance of respiration except in neurotics and alcoholics. He also gave it on four occasions to a woman with double mitral murmur without bad results. The use of a lint mask was found most useful, permitting the free admixture of air. Vomiting was very rarely observed; when present it is probably due to swallowed blood.

Traumatic Dislocation of the Hip in Children.—The rarity of traumatic dislocation of the hip in the young is attributable to the weakness of the thigh-bone as compared with the strength of the hip-joint ligaments, so that the bone breaks before the ligaments tear. It has, however, been seen in the young; Erichsen mentions two cases, in one of which the dislocation was pubic in a child eighteen months old and the other dorsal in a child six years old. A. L. OWEN (Lancet, Apr. 5, 1902) reports another case, that of a boy six years of age. The valuable researches of Bigelow and Allis into the methods of production and reduction of this dislocation have thrown much light on the subject. Even in the time of Hippocrates flexion was considered of importance in reducing dislocations of the hip. Owen's patient, a boy, admitted December 23, 1901, was kicking a ball, slipped and fell suddenly in a position of complete abduction of both legs; he was unable to get up, complained of pain, and was taken to the hospital. On examination the right thigh was found to be in partial flexion, abduction and internal rotation; the leg was completely flexed on the thigh and held there with the hand over the right ankle; there was evident pain upon passive extension of the leg. Further examination showed a classical dorsal dislocation of the hip. Chloroform was administered and reduction attempted in the usual way, the leg being flexed on the thigh, the thigh on the abdomen, and the extremity circumducted outward and brought into complete extension. It proved successful on the first attempt. Passive motion was begun in two weeks and at the end of the third week the patient was well and discharged without shortening, lameness, or impairment of function.

Surgical Treament of Banti's Disease.—In the case of this disease reported by L. TANSINI (La Riforma Medica, Apr. 1, 1902) enlargement of the spleen occurred some time prior to hepatic cirrhosis with ascites; from this fact, the theory is deduced that the liver lesion was due to irritation from a toxic substance elaborated by the spleen. Curative measures adopted were splenectomy and removal of ascitic fluid, followed by Talma's operation for the establishment of a collateral circulation through attachment of the epiploon to the parietes. Reaccumulation of fluid in small amount occurred shortly after the operation and paracentesis was practised to relieve tension of the abdominal cicatrix. By the third week increased ramification of the subcutaneous veins of the abdomen was noticed, and there has been no further occurrence of ascites. It is believed that an entire cure has been effected, the patient having been under observation for three months and continuing to improve.

Subphrenic Abscess.—The proximity of numerous important viscera to the diaphragm makes a determination of the origin site of collections and of pus difficult and important because it is necessary to evacuate them thoroughly at the earliest possible moment. The pus may be localized in the following zones: Right interhepatodiaphragmatic, limited on the left by the falciform ligaments; left interhepatodiaphragmatic on the other side of the same ligament, bounded by the left half of the diaphragm, left lobe of the liver and a variable portion of the anterior surface of the stomach; perisplenic, limited internally by the left extremity of the stomach and the pancreas, externally by the diaphragm or the ribs, above by the diaphragm and the tip of the left lobe of the liver, and below by the splenic flexure of the colon; retrostomachic corresponding really to the lesser sac of the omentum; extraperitoneal which corresponds chiefly to that part of the liver and the crura of the diaphragm not covered by this serous membrane; the abscesses may be non-gaseous or gaseous, constituting a true pyopneumothorax subphrenicus. The common causes he enumerates as traumatic, osseous, hepatic, splenic, appendical and metastatic as part of a primary suppuration elsewhere in the abdomen. The diagnosis rests upon the following symptoms: Intense, acute pain on one side, usually in the hypochondrium, with a distinct abdominal reaction; fever commonly high, accompanied by chills or chilliness, profuse sweats and a septic pulse. Dyspnea characterized by respiration limited to upper part of the thorax. The pain usually has some point of maximum intensity which the patient can indicate. The objective symptoms which it is important to distinguish are empyema at the base of the lung, subphrenic abscess and abscess of the liver. F. LEJARS (La Sem. Méd., 1902, No. 13) mentions the following points: The examinations must be conducted with the patient lying down and then seated. Inspiration will commonly show bulging on the affected side, edema of the skin, limited respiration, slight or marked fixation of the lower chest and abdomen. Later, spreading of the intercostal spaces with localized protrusion. Changes in size are confirmed

by measurements. Careful, gentle, systematic palpation will reveal contractures of the muscles, great tenderness, usually a hard mass placed more or less low, displacement of the liver downward, or occasionally obscuration of its free border. The percussion will show marked dulness or flatness extending upward into the chest, obscuring that of the normal liver and extension downward of the liver dulness into the abdomen. Suddenly at the upper border of the mass, the percussion note becomes vesicular, suggesting that the lung is not involved. The same general facts apply to auscultation. Radioscopy will usually permit the diaphragm to be traced upward and over the top of the mass and will establish the displacement of the viscera; the liver is displaced downward and the heart upward. In empyema the displacement of the heart is always toward the opposite side. Having found the point of maximum pain and tenderness, exploration with the needle is most important. The technic of this the author defines as follows: The needle must be small and long, introduced through the skin and then, with a vacuum produced by maintaining the piston withdrawn, advanced to full length. The needle is slightly advanced inward; as soon as fluid is reached the syringe as a rule will fill. If the first puncture be negative, he recommends repeating this step at the same sitting many times before concluding that there is no pus. In the vast majority of cases it will be found, if patience, deliberation and judgment mark the use of the needle. Fuerbringer mentions the following sign as showing whether or not pus is in the thorax or in the abdomen. If the needle pierce the diaphragm, it will follow the movements of it. Its outer end lowers with expiration and rises with inspiration. If it be in the thorax, the reverse takes place. Pfuhl gives a sign much more reliable. If the pus has been found with a large bore needle in a cavity below the diaphragm, it spurts actively during inspiration and inactively or not at all during expiration. The final step is incision and drainage of the abscess.

A New Hemorrhoid Operation.—A method of removing hemorrhoids under local anesthesia is submitted by T. C. MARTIN (Jour. Amer. Med. Assoc., Apr. 26, 1902). He uses a special form of clamp—a hollow cone of which one quadrant is fenestrated and occupied by a movable blade with a serrated edge. Hence, after the instrument is introduced, it may be made to receive the pile without irregularly expanding the anus and thus provoking pain. The method is briefly as follows: After daily gradual dilatation of the anus by Kelly's conic dilator, the anoscope may be introduced and the wall of the summit of each tumor infiltrated with a one-tenth-of-one-per-cent. solution of eucain. After withdrawal of the anoscope, the clamp is introduced, the fenestrum opened, the hemorrhoid seized with forceps, brought into the opening, and the serrated blade locked. Another injection of eucain may be necessary. The tumor may be cut away and the edge cauterized or sutured if necessary. The author claims to have had excellent results from this method, with only slight annoyance to the patient.

Thrombosis of the Cavernous Sinus; Report of Four Cases, with One Cranial Operation.—The diagnosis of this condition has rarely been made. The literature includes 178 cases in addition to 4 cases reported by E. W. DWIGHT and H. H. GERMAIN (Boston Med. & Surg. Jour., May 1, 1902). Most authors agree that the treatment is entirely preventive. Those who suggest operation usually speak only of drainage through the orbit. In the case operated on by Dwight the sinus was revealed by trephining the temporal bone; this same operation was performed a month later in a case described by Hartley and Knapp. These two cases are held to justify the belief that thrombosis of the sinus is distinctly an operable condition. Incision into one sinus apparently relieved instantly and completely the interference with circulation in both. The cranial operation is not associated with extreme difficulty; it can be done under almost primary anesthesia; it is not associated with any degree of shock, and it can be completed in a few minutes; the hemorrhage can be easily controlled.

Problems Relating to Surgery of the Stomach.—Thickening about a pyloric ulcer may be so great that even after incision, with the parts open to inspection, the operator cannot differentiate macroscopically a condition of cancer from one of ulcer. Enlarged lymphatic glands, writes W. J. MAYO (Boston Med. & Surg. Jour., May 1, 1902), unless distinctly cancerous, do not help; in a majority of diseases of the stomach marked by retention and fermentation, enlarged glands are present in the omenta. In many cases of chronic dilatation the surgeon cannot find an adequate cause. Pyloric spasm is theoretically predicated. Under anesthesia, if the normal pyloric opening be compressed between the thumb and finger, invaginated into the stomach and duodenal walls, on either side, the lumen will permit of easy meeting of the opposing digits, and gives the feeling that an opening exists about the size of a silver three-cent piece. In neurotic cases there may be an accompanying dilatation, usually of the atonic variety, without thickening of the wall. On surgical exploration such a stomach is usually found contracted and empty, although previous examination has shown it to be dilated. Surgical indications are dilatation with retardation of the passage of food. The demand for operation is a personal equation between the experience of the surgeon and the disability of the patient. Cases of ulcer fall into two groups, those at the pylorus with dilatation and those without dilatation. In the former class drainage of the stomach is the more satisfactory. Ulcers in a non-dilated stomach should if possible be excised. In fifteen cases of Heineke-Mikulicz pyloroplasty, relief resulted in eleven. In four cases the plastic operation enlarged the caliber of the pylorus, but the degenerated muscle of the stomach-wall was unable to elevate the food from the gastric pouch to the high-lying pylorus; secondary gastro-enterostomy was of necessity performed. Pyloroplasty has a limited field of usefulness in cases in which dilatation is not marked. All in all, gastro-enterostomy is more satisfactory, but in cancer the palliation is of such short duration that the operation is hardly justifiable. In benign conditions gastro-enterostomy has the advantage of draining the stomach from the lowest point, relieving the retention of obstruction as well as the painful contact which the food causes in gastric ulcer. In Mayo's judgment, the results after suture and those after the use of the Murphy button are about the same. There is little choice beween the anterior and the posterior wall. The main thing in gastro-enterostomy is that the opening be low down near the greater curvature. Chulmski's experiments showed that union was firm after the fifth day; in two of Mayo's cases, however, the bowel became detached from the stomach, once on the seventh and once on the tenth day.

Simple Blood-Count in Diagnosis.—The various methods of counting the blood-cells which seek to distinguish various kinds of the white and of the red cells are of undoubted and enormous value in diagnosis, but the difficulty is that the ordinary practitioner has often neither apparatus, chemicals nor time necessary for the procedure. The value of the simple enumeration of the white cells in appendicitis has recently been stated by H. CURSCHMANN (La Sem. Méd., 1902, No. 16), with the following general conclusions: The simple counting of the white cells constitutes a sure and practical method of determining the existence of sup-

puration. In cases of this disease without pus, the white globules are increased in number; or the number is slightly increased at the very outset of the affection and rapidly returns to the normal. If there be no return to normal an abscess exists. After the evacuation of such abscess, the number of white globules returns to the normal. On the whole the observer thinks that this means of diagnosis is much more valuable than that of the thermometer, because the temperature curve may vary infinitely and because an extensive suppuration may be present without fever, while a blood-count would certainly show a large increase in the number of white cells. Other observers, H. Kruettner, in the field of surgery, and Max Deutzmann, in the field of gynecology, have recently made observations which tend to confirm precisely these views of Curschmann.

Surgery of the Heart.—In the diagnosis of penetrating wounds of the heart the main symptoms and signs are those produced by hemorrhage and less important are those due to shock. H. L. NIETERT (Phil. Med. Jour., May 3, 1902) classifies the signs of heart wounds under three headings: (1) Those which indicate internal hemorrhage into the pleural cavity; (2) those produced by hemorrhage to the exterior; (3) those which are due to hemorrhage into the pericardium alone. The conditions that may confound the diagnosis are injuries to the large thoracic vessels. The author believes that all wounds of the chest causing a dangerous hemorrhage should be explored to the bottom. In approaching the heart the extra- or intrapleural method may be pursued. The writer has devised an operation for the first method, which consists of the making of a flap including the sternum from the level of the third rib to the ensiform, cutting the costal cartilages of the fourth, fifth and sixth ribs on the left side, and breaking those on the right when the flap is loosened and turned over. If the pleura be injured the intrapleural method may be employed. In the case reported by the author, the patient presented a penetrating stab wound which involved the left ventricle. Two interrupted silk sutures stopped the hemorrhage completely. A gauze drain was placed in the pericardium and one in the pleural cavity, both being removed on the fourth day. An empyema of the left chest developed a few weeks later, for which thorectomy was done. The patient made an uninterrupted recovery. Conclusions to be drawn from a study of the subject are as follows: Gentle manipulation of the heart may be done without producing shock; the introduction of sutures produces only slight irregularity of the heart's action; heart wounds heal rapidly and suturing should be done in all cases in which there is danger of fatal hemorrhage; the extrapleural route is best for cases free from pleural involvement; the intrapleural is to be preferred if the pleura has been injured.

Sarcoma Treated by the Injection Method.—A very interesting case of a sarcoma rapidly involving one side of the upper jaw, secondary to an injury and forming metastatic growths on the other side of the neck, is reported as being successfully treated by Coley's method of injection. O. K. WINBERG (Med. Rec., May 3, 1902) states that a radical operation had been done, but that the growth was too large to be entirely extirpated. The patient grew rapidly worse and finally became thoroughly jaundiced, pulse 130 to 140, irregular and intermittent, the growth becoming so large that for several days nourishment could not be taken by mouth. In desperation an injection of one-half a minim was begun and gradually increased, although the patient grew worse during the first few days and death was daily expected. Later a change for the better was noticed and from that time on gradual but decided improvement was seen. Within a month the patient was able to be out and to attend to professional duties and in four months all evidences of the growths, except the external scars, had disappeared. The tumor was pronounced sarcoma by Drs. B. H. Huxton, Jas. Ewing and W. H. Welch, who examined it microscopically.

Treatment of Cholelithiasis.—The rational treatment of gall-bladder affections depends upon a proper appreciation of the pathological conditions. A. A. BERG (Med. Rec., May 3, 1902) points out that gall-stones are usually formed as a result of the presence of a low grade catarrh of the mucous membrane and that the severity of the attack depends largely upon the character of the infection. Cholecystitic pains or attacks of biliary colic unattended by fever may be treated medically, for they are not dangerous to life and frequently subside when the stone has passed or when the inflammatory condition of the bladder has ceased. He believes that after one attack the gall-bladder is always predisposed to further inflammatory conditions on account of the changes in the mucous membrane. After one or two attacks an internal operation is indicated; the mortality is only 2 to 3 per cent. If acute cholecystitis has been present, associated with fever, operation is always preferable, for the danger is considerable and the liability to recurrence is great. He states that the reason why constitutional symptoms do not correspond so closely to the severity of the local trouble as they do in appendicitis is because the wall of the gall-bladder is more elastic than that of the appendix and the tension and resorption are never so marked. Immediate operation during acute attacks in patients who are septic is attended by a mortality of 50 to 75 per cent.

Resection of the Cervical Sympathetic in Basedow's Disease.—Leaving out of consideration the causes of exophthalmic goiter, whether they are dependent on direct or reflex stimulation of the sympathetic nerve in the neck, or are the expression of a neurosis, a lesion, a compression or an intoxication, BELACESCU (Archiv f. klinische Chirurgie, Apr., 1902) sets out to determine to what extent the cervical sympathetic plays a rôle in the production of Basedow's disease. Each of the principal and subsidiary symptoms may be shown to have some connection with an irritation of the cervical sympathetic. Exophthalmos, one of the most prominent symptoms, is believed by most authors to be dependent upon a stimulation of the cervical sympathetic, leading to an energetic contraction of the muscular cone, known as Müller's smooth muscle, at the posterior pole of the bulb. If this be true, section of the sympathetic would prevent the exophthalmos, which it does in all cases. The enlargement of the thyroid depends on an enormous dilatation of the vessels of the latter, which in turn is dependent on a stimulation of the vasodilator fibers of the neck and chest. The activity of the vasoconstrictor fibers is inhibited and the dilatation of the arteries causes hypertrophy of the gland. The theory of Jonnesco is that the struma of Basedow's disease is dependent on the increased activity of the thyroid elements and hypersecretion of the gland, which are dependent in turn on the permanent stimulation of the secretory fibers of the thyroid. Whichever of these theories is correct, the resection of the cervical sympathetic causing section of the vasodilator, vasoconstrictor and secretory fibers, results in atrophy of the goiter. This in fact occurs in every case. Tachycardia is likewise to be attributed to irritation of the cervical sympathetic. The accessory symptoms seem to be dependent on changes in the circulation of the brain brought about by stimulation of the cervical sympathetic. These symptoms, consisting of tremor, sensations of heat, sweats, gastro-intestinal disturbances, and the nervous excitability so frequently seen in this disease, are, according to Jonnesco, dependent on a perma-

nent cerebral anemia produced by a continuous stimulation of the vasoconstrictor fibers of the cervical sympathetic going to the brain. Extirpation of these fibers leads to cerebral congestion. The various operations on the cervical sympathetic for the relief of exophthalmic goiter are the following: (1) Simple division of the cervical sympathetic; (2) ablation of the cervical sympathetic by means of Jaboulay's operation, which, without a large incision, is devised to stretch and twist the nerve by means of artery forceps attached to its upper and lower ends; (3) simple stretching of the cervical sympathetic; (4) partial resection of the latter; (5) partial and extensive resection; and (6) total resection. Considering the results of the large number of operative precedures for the cure of primary Basedow's disease, the author concludes that total and bilateral resection of the cervical sympathetic, which is known as Jonnesco's operation, is the most effective. The mere stretching and even the simple division of the nerve do not destroy all the connections of the sympathetic with the thyroid. The partial and extensive resection is applicable in only those cases in which the tachycardia is not pronounced. Although the direct surgical treatment of simple goiter by means of the almost total resection of the thyroid gland is not in itself a dangerous operation, in the struma of Basedow's disease it is very serious and is accompanied by many disadvantages.

Bile-Duct Surgery.—In a contribution to the surgical treatment of obstruction in the common bile-duct by concretion, A. W. M. ROBSON (Lancet, April 12, 1902) gives the details of the operative treatment as follows: A firm sand-bag is put on the back opposite the liver, pushing the spine, the liver and the common bile-duct well forward and acting like the Trendelenburg position by causing the viscera to fall away downward from the field of operation. A vertical incision is made over the middle of the right rectus, the fibers of which are separated by the finger, and the gall-bladder and the ducts are expeditiously and effectively exposed. When it is necessary to open either the common duct or the deeper part of the cystic duct, instead of prolonging the incision downward, it is carried upward into the space between the ensiform cartilage and the right free border of the ribs, thus exposing the upper surface of the liver. It will then be found that by drawing the liver upward toward the front of the body, or at first downward, if necessary, away from the diaphragm and ribs, the whole of the common duct is brought quite close to the surface with the gall-bladder. The gall-bladder is usually sufficiently strong to bear traction and the assistant can grasp it with his fingers or with forceps, and by general traction can keep the parts well exposed and, at the same time, by means of his left hand with a sponge beneath it, he can retract the wound of the viscera. It will now be observed that, instead of the gall-bladder and the cystic duct forming an angle with the common duct, an almost straight passage is found from the opening into the gall-bladder to the entrance of the bile-duct into the duodenum. If the adhesions have been thoroughly separated, the surgeon will have immediately under his eye the whole length of the ducts with the pancreas and duodenum. So complete is the exposure with this method that the peritoneum can be incised and the common duct separated from the structures in the free border of the lesser omentum, but this is not necessary except in cases in which the growth must be removed. The surgeon, with both hands free, can now with his left finger and thumb so manipulate the common duct as to render prominent any stones, which can then be removed by cutting down upon them and turning them out. A considerable protection against a flux of bile must be made with sponges. It is well to pack one into a pouch near a kidney and further have the assistant mop up the bile as rapidly as it flows out. Exploration of the hepatic duct must also be made with the fingers behind the duodenum. Drainage of the wound had best be carried out through a stab wound in the loin.

Resection of the Knee.—In the treatment of tuberculous inflammation of the knee two methods are available—the operative and the non-operative. W. SYKOW (Ctlblt. f. Chir., 1902, No. 15) carried out the following procedure in a case of resection: In order to replace the removed joint, he obtained a piece from the lower third of a thigh bone so sawn that only the rear wall remained behind. In this way a half-ring of bone was obtained which was placed between the thigh bone and the tibia and plastically covered the periosteum from above, thus replacing in part the joint removed. This ingenious procedure succeeded well and finally gave a limb that was much less shorter than would otherwise have been the case.

Carcinoma of Hepatic Flexure of Colon.—Cases in which there is a palpable tumor mass in the right hypochondrium ordinarily present to the surgeon a diagnostic problem of no mean difficulty; the gall-bladder, liver, pylorus, duodenum, kidney, and even other structures, must each be considered. Cases in which no such mass presents are proportionally more puzzling; the most important points in their diagnosis are summed up by MAYLARD (Edinburgh Med Jour., May, 1902) as follows: Most suggestive is the prominence of gastric derangements, in association with these symptoms, peculiarly indicative of colon disease. The order in which these two sets of symptoms appear and their relative importance in the clinical picture depend on the mode of growth of the tumor. If it does not tend to occlude the lumen of the colon, from which it springs, but grows outward, compressing neighboring structures, especially the duodenum, the presence of colon disease may remain entirely unsuspected. In such cases all the symptoms arise from compression of the duodenum and are practically those of pyloric obstruction. Again, there may be simply the general signs of an obstruction of the large gut, with no complicating features; such cases baffle a definite localization. If, however, as is generally the case, the tumor tend first to occlude the corresponding portion of colon and then to exercise secondary compression on the duodenum, a very distinctive and typical syndrome supervenes. There are first the symptoms of hepatic flexure obstruction. These are usually more acute than those connected with obstruction and more distally situated. The pain is more frequently present than when the disease is in other parts of the colon; it is more acute, and it is usually felt over the seat of disease. Constitutional symptoms, moreover, generally occur very early. If to this set of symptoms, dilatation of the stomach, retention, etc., be superadded, the diagnosis becomes almost positive.

MEDICINE.

Primary Carcinoma of Liver.—On March 8, 1901, a patient of H. D. JUMP and J. D. STEELE (Proc. Phila. Path. Society, Mch., 1902) had a mild attack of biliary colic and one week later a similar attack occurred. She then became weak and depressed and there was constant distress in the right hypochondrium. There was no jaundice, no increase of liver dulness, and the gall-bladder was not felt. Six weeks later the liver was palpable, and it continued to grow till it reached nearly to the crest of the ilium. It was uniformly enlarged and tender and its surface was nodular. She died in coma three months after the first attack of biliary colic, never having become jaundiced. The gall-bladder was filled with large gall-stones, and neither it nor its ducts were the seat of malignant disease. The liver was tre-

mendously infiltrated with nodules of true glandular cancer. No growth was found in any other organ.

Blood-counts in the Newborn.—The results of three hundred counts in forty-three different infants are summarized as follows by JOHN AITKEN (Jour. of Obst. and Gyn., Brit. Empire, Apr., 1902): (1) The red corpuscles at birth are relatively more numerous than in the adult. During the first forty-eight hours of life the number per c.mm. increases, owing to concentration of the blood (from loss of fluid by urine, perspiration, etc., and fasting). The child loses weight during this period. From the second day, as a rule, a gradual fall in number takes place, so that by the tenth day these are less than at birth (200,000-400,000 per c.mm.) The child gains weight during this period. During the early days the blood shows variation in size and shape of the red blood-corpuscles, and deficiency in rouleaux formation. Nucleated reds—normo- and megablasts—are present at birth in greatly varying numbers. They are found as late as the ninth day. (2) The hemoglobin is relatively high at birth and during the few succeeding days is usually over 100 per cent., the individual cells being richer than those of the adult. (3) The leucocytes, which at birth are two or three times as numerous per c.mm. as in the adult, increase during the first two days because of changes in digestion and in volume of the blood. After this, the number diminishes, and by the tenth day, it is down to 4-6,000. Digestion leucocytosis is very marked, especially after the first feedings, and when a fast has preceded feeding in later days.

Tuberculin in Diagnosis.—From a study of 100 cases in which this agent was employed as a diagnostic measure, C. M. WOOD (Jour. Amer. Med. Assoc., Apr. 19, 1902) has formulated the following requirements for the reaction: (1) The rise in temperature must amount to at least two degrees; (2) it must reach its height between six and twenty-four hours after the injection, except in fibroid cases, in which it may be delayed to thirty-six hours; (3) it must be accompanied by at least two of the following symptoms: Chilliness, nausea, headache, muscular pains. Of these cases, 41 gave the reaction, of which 36 were later proven undoubted tuberculosis; 3 were syphilitic, and 2 profoundly neurotic. Active syphilis must always be definitely excluded. Of the 59 cases which failed to give the reaction, only one subsequently showed evidence of tuberculosis. The author concludes that tuberculin in doses of .005, carefully increased when necessary to .010, produced no bad effects in simple or complicated tuberculous or non-tuberculous cases. The characteristic reaction usually occurs about the eighteenth hour and is accompanied by chilliness, headache, nausea, or muscular pain. The tuberculin test ranks in value with the Widal typhoid test, and since in the former the technic is simpler, the materials are more readily obtainable and more permanent, the danger is no greater and the information obtained is scarcely less reliable.

Transmission of Yellow Fever.—From an extensive study of available historical documents C. FINLAY (Jour. Amer. Med. Assoc., Apr. 19, 1902) finds that it is possible to trace an agreement between the history of yellow fever and its transmission by the *Culex* mosquito. The transportation of these insects in sailing vessels appears to have been of frequent occurrence and to this must be attributed the coincidence of the severe epidemics noted in widely-separated places even in early days. Healthy mosquitoes were probably also frequently imported into subtropical countries, as in Italy, southern Spain and the coasts of the Mediterranean, as well as in the southern United States. The previous existence, therefore, of the yellow-fever mosquito must be considered *per se* to constitute a dangerous complication whenever a case of yellow fever happens to be introduced in a place previously free from that infection. The range of the Andes and its prolongation along the Isthmus of Panama and Central America have probably proved a barrier to the migration of the mosquitoes to the west coast of America. The opening of the interoceanic canals, however, may cause this obstacle to disappear to some extent. It is to be hoped that all the existing foci of the disease may be eradicated by that time.

Unusual Case of Leucemia.—A case which cannot be classified among the usual subdivisions of leucemia is reported by L. MICHAELIS (Zeitsch. f. klin. Med., Vol. 45, No. 1 and 2). The patient gave evidences of a disease of the blood-forming organs, leading to death within three months, without swelling of the lymph-nodes, but with large, soft spleen and red bone-marrow. Examination of the blood showed a few normoblasts, no leucocytosis, but considerable change in the relative proportion of the different leucocytes to each other, the large lymphocytes predominating, and as many as 7 per cent. of myelocytes being present. Without doubt the case belongs to the leucemic diseases, but the question is to which one. Against lymphatic leucemia speak the absence of lymphatic swellings and hemorrhagic diathesis, the presence of myelocytes in the blood and of marrow giant cells in the organs; yet the appearance of the smears did not suggest myelogenous leucemia. In the author's opinion not sufficient stress has been laid upon cases like this which give evidence of an intermediate type.

Strange Case of Pneumothorax.—In strong persons the development of a pneumothorax is usually marked by sudden collapse, severe dyspnea, feeble pulse and subnormal temperature; in the weak, especially those already suffering from dyspnea, the accumulation of air in the pleura may not aggravate the general condition until the disease is far advanced. A unique case is reported by G. JOCHMANN (Zeitsch. f. klin. Med., Vol. 45, No. 1 and 2). A young man came to the clinic with no other sign than slight pain over the chest, some palpitation of the heart and slight dyspnea on exertion. Physical examination and transillumination with the Roentgen rays revealed the presence of a large amount of air in one pleura, compressing the lung flat against the vertebræ and considerably displacing the heart. Under expectant treatment a cure rapidly set in and the lung began to expand, as could be seen by repeated X-ray examinations. The patient presented himself again soon after his discharge with the same symptoms and physical signs, but the second time the cure was complete. The usual causes of pneumothorax, such as trauma and tuberculosis, were absent and the presence of a pleuropulmonary fistula of unknown cause is assumed as origin.

Early Signs of Pleurisy.—The advances of the last twenty years in the treatment of disease have probably rested more upon improved diagnosis than upon any other single factor. The following contribution to the very early diagnosis of pleurisy with exudation is given by B. PRZEWALSKI (Ctlblt. f. Chir., 1902, No. 14). In a careful examination of the chest in patients with this disease, even in the earliest stages he has found in a considerable number (14 with serous and 5 with suppurative pleurisy, confirmed by exploratory puncture), without a single exception, a narrowing of the intercostal spaces and a very appreciable resistance over them on the affected side. This symptom can be observed most distinctly and easily in children; the narrowing of the intercostal space over the region of the exudate is very characteristic and finds its analogy in the contracture of muscles in the extremities so often seen when the joints are diseased. The reason why so constant and typical an anatomical symptom of exu-

dative pleurisy has as yet been nowhere mentioned in the best known text-books for diagnosis is that the amount of motion in the ribs in many normal individuals is comparatively slight. This symptom seems to arise through the rigidity of the internal intercostal muscle. If this explanation of normal costal respiration be correct, it seems to rest upon a purely reflex phenomenon.

Achylia Gastrica.—The name achylia gastrica is a misnomer, according to L. KUTTNER (Zeitsch. f. klin. Med., Vol. 45, No. 1 and 2), since though there may be no hydrochloric acid secreted, some pepsin and rennin is generally present and a parallelism between the three does not exist. As characteristics of the disease, the following points are given: (1) The stomach, examined in the morning before breakfast, is always empty except for small amounts of mucus. (2) Expression three-fourths to one hour after a test-breakfast gives evidence of a complete inactivity on the part of the digestive power of the stomach, as far as the solid ingredients are concerned. (3) The expressed fluid shows an acidity in the neighborhood of four. (4) Its power to digest albumin is slight. (5) The amount expressed is small. (6) Considerable vulnerability of the mucosa is manifested by the frequent presence of blood in the expressed fluid. The subjective symptoms are either absent or merely amount to disturbances of appetite and pain when the stomach is empty. In another class the symptoms are intestinal in the form of diarrhea and tympanites, or they are nervous and suggestive of hysteria or neurasthenia. An examination of the particles of mucous membrane found in the washings shows that there is always a proliferation of the interstitial tissue, often with destruction of the glands.

Pseudomeningitis.—The presence of a symptom-complex resembling meningitis, without the demonstrable lesions of this disease at a later autopsy, has sometimes been noted, especially during epidemics of influenza. An unusual case of this kind is reported by J. DONATH (Deut. med. Woch., Apr. 17, 1902). The patient, a young man of eighteen, developed eleven days after an osteotomy for genuvalgum a sudden rise of temperature, severe cerebral symptoms, loss of consciousness, muscular spasm, retracted abdomen, etc., with death following on the third day. Fat embolus and uremia could be properly excluded and all the signs pointed to meningitis, possibly tuberculous. Autopsy showed some edema of the pia and surface of the brain, but no signs of any acute inflammatory changes. The influenza bacillus could be readily demonstrated in some of the lobules. The author calls attention to the diagnostic value of lumbar puncture in these cases, when ordinary means are of doubtful value.

Diagnosis of Pentosuria.—In certain cases the usual sugar tests can be elicited in the urine without there being present a true diabetes mellitus. The reaction is afforded by pentose and attention is called to the practical necessity of distinguishing its presence by M. BIAL (Deut. med. Woch., Apr. 10, 1902). The latter has modified the so-called "orcin reaction" so as to make it more readily applicable for office tests. The reagent is made by adding 500 grams. of fuming hydrochloric acid to one gram of orcin; to this 25 drops of a 10-per-cent. solution of ferris chloride are then added. Four or five c.c. of this solution are mixed with from 2 to 3 c.c. of urine and heated until bubbles are given off. A thick, green, flocculent precipitate indicates a positive reaction, the quantity depending on the amount of pentose present. The advantages of the method are its simplicity, ease of performance and reliability.

Pneumococcic Gastritis.—It needs little evidence now to convince the practitioner that almost all of the germs of infectious diseases are capable of attacking equally well any part of the system and causing a different clinical picture in accordance with the site of their invasion. A. G. R. FOULERTON (Lancet, Apr. 12, 1902) reports a case of gastritis caused by the pneumococcus and followed by a general invasion through this same germ. The patient was twenty-six years old, and was admitted December 27th, with the following history: The fortnight previously he had had "quinsy" and had remained ill ever since; three days before admission he had a severe nose bleed which continued more or less persistently. On the day before admission he had eructations of dark-colored, foul-smelling fluid. On admission he was prostrated to an extreme degree. His lips were swollen and in the skin around them and on the cheeks were small spots of hemorrhage. There was coagulated blood in the nostrils, on the lips and on the gums by the teeth. The breath was very offensive and the tongue was dry and covered by a dark gray fur. The pulse was rapid, small and soft. On the 28th, bleeding from the nose continued and after a gradual sinking he died on the morning of the 30th with urgent dyspnea. It must be noted that throughout the illness there was neither pain in the stomach nor vomiting, nor for that matter anything to suggest disturbance of the stomach. This organ, however, after death was in a state of marked change. It contained a dark-colored fluid of offensive, cheesy smell, and was lined from end to end with a rough exudate almost black in color and firmly attached. Toward the pylorus it became more gray. There was considerable thickening in the wall. Elsewhere in the body were signs of general invasion and from most of the organs the pneumococcus was recovered.

Peritonitis and Empyema.—Inflammations of serous membranes are by no means confined to one locality. There may be pleurisy, pleuropericarditis, peritonitis or meningitis associated with pleurisy or pleuropneumonia. In these cases the double or triple lesion is undoubtedly due to the invasion by micro-organisms which have been carried from one organ to another by the blood or lymph-stream, or in some cases infection has occurred by direct contact. In septicemia of pneumococcus origin one may find pleuropneumonia, peritonitis and meningitis in the same subject, though in an early stage because death has resulted from toxemia before the lesions were far advanced. In other cases the streptococcus or the tubercle bacillus has been the organism causing the multiple inflammation. Such associated serous inflammations bear an analogy to the multiple joint inflammations, a circumstance which has probably suggested the names of "polyserositis" or "polyorrhomenitis." Cases of such multiple inflammations differ regarding the infection present and the organs attacked, and only confusion will result from including them under one name. H. ASHBY (Lancet, Apr. 19, 1902) reports a case of purulent peritonitis associated with empyema followed by recovery. The girl was eight and one-half years old, delicate, subject to attacks of bronchitis, but was in fair health up to September 10, 1901, when she was suddenly seized with vomiting, diarrhea and abdominal pain; the next day her temperature was 103° F., and there were incessant vomiting, foul, liquid stools, cough and mucous expectoration. The vomiting ceased in a few days, but the diarrhea continued for a week, with a temperature of 103 to 104° F.; there was also great pain in the abdomen and left chest. Jaundice was evident. On examination September 21st, she showed tenderness in the abdomen and severe paroxysmal pain, general tympanites; signs of consolidation in the left chest over the lower two-thirds of the lung behind, with bronchial breathing and consonating râles; pneumonia at the base of the right lung; rapid respiration; temperature

101° F.; pulse 140. On the whole, she was in good general condition, considering the severity of the disease. Signs of fluid soon developed in the abdomen and in the chest, and a large amount of pus was evacuated. That removed from the abdomen contained the micrococcus tetragenus, and that from the chest the pneumococcus. The patient eventually recovered.

Prognosis in Typhoid.—A peculiar symptom which was suggested by Professor Trousseau many years ago as being of value in determining the prognosis in typhoid fever is brought to notice by W. C. DOANE (N. Y. Med. Jour., Apr. 26, 1902), who has confirmed its significance in many cases. When deafness is present only on one side the prognosis ought to be guarded, for the patient almost always dies, although the disease at that time may appear very mild. If the deafness occur on both sides, however, the prognosis is good, for it is said that persons are almost never seen to die when this symptom is present. No explanation for this unusual phenomenon is offered, but its value may be learned by experience.

Gonorrheal Rheumatism.—There is considerable diversity of opinion in regard to the etiology of this disease, some writers claiming that it is a toxemic effect of the gonococcus upon the general system, either by its presence in the circulation or by that of the toxins of this organism. They also claim that the synovitis has no relation to rheumatism. J. D. WESTERVELT (Med. Rec., May 3, 1902) believes that the disease is really a mixed infection in which rheumatism plays an important part and must engage one's attention in the treatment. It usually comes on late in gonorrheal attack and has no symptoms of a septicemic or pyemic affection. The urethral discharge must be treated, but besides that the rheumatic element and the general condition of the patient demand attention. He places much dependence on the internal administration of cod-liver oil with five grains of potassium iodide in each tablespoonful given four times a day. The latter, by its eliminating properties, removes the cause of the pains and increases the flow of urine and uric acid. The oil tones up the nervous system and improves the general nutrition.

Caisson Disease.—A partial recognition of some of the causes of this interesting modern malady has done much to decrease its frequency. A. H. MUIR MACMORRAN (Brit. Med. Jour., Apr. 26, 1902) cites a series of cases which developed in the recent building of the Greenwich footway tunnel. One of the chief reasons why there is less caisson disease than formerly is that in most instances the men are now subjected to a very careful and searching medical examination. The total percentage of rejections made by himself and his colleagues of applicants for permission to work underground was 18.8. The most important grounds for rejection are a high-tension pulse, booming heart sounds or reduplication of the second sound. This supervision is the first means of combating caisson disease. The second consists in reducing the CO_2 as far as possible. This was accomplished by the introduction of a blow-off tube in the shield and by injecting the air through screens of caustic soda. Macmorran believes the theory of hyperemia has been set aside by many on altogether insufficient grounds. He thinks that the true explanation of caisson disease lies in the combining of the two factors most frequently discussed in connection with it, namely, hyperemia of the deeper tissues and accumulated impurities in the blood, due to imperfect interchange of gases in the lungs. Nerve sedatives are to be preferred to opiates in the treatment of caisson disease, and in severe cases cannabis indica often gives excellent results. The nitrates and acetates of potassium are useful in the termination of the trouble, but by far the most important part of the treatment is the medical lock into which air passed over caustic soda is pumped till the pain subsides. Caisson disease will become a thing of the past if only suitable men be employed and if the suggested treatment be given to the injected air.

GENITO-URINARY AND SKIN DISEASES.

Pyuria.—When pus appears in the urine, its source may be the kidney, or the bladder, or other parts of the tract. The determination of what is the primary origin of the pus is a very important question. G. ROSENFELD (La Sem. Méd., March 26, 1902) gives the following points: If the urine be acid, it is more apt to come from the kidney than if it be alkaline, with the exceptions of some of the conditions of the bladder, like tuberculous cystitis and uric-acid calculi, when it may remain acid. The white blood-cells which are found in the urine are round or normal in shape if they come from the bladder, but much altered and crenated if from the kidney. Certain tumors of the bladder may also give altered white blood-cells. Epithelial cells may also aid in the diagnosis, but as a matter of fact are not as important as formally supposed. Rosenfeld claims that the greatest differential point is the quantity of albumin in the urine after it has been allowed to settle. If the pus proceed from the bladder, the albumin is low, about 1½ per cent. If from the kidney it is much more apt to be high, about 3 per cent. or more. The reason is that the kidney which is the seat of purulent infection is almost certain to secrete albuminous urine.

Urethral Stricture.—Circular electrolysis is the best method of treating urethral stricture, according to KHOLTSOFF (Russki Vratch, N. 5, 1902). He uses slightly modified Newman's instruments and gives to his patients one to five seances of about ten minutes' duration at intervals of a couple of months. The method has been employed in gonorrheal as well as traumatic strictures with uniformly good results. This treatment dates back only two years, consequently he cannot as yet judge about the final results.

The Vibratile Sound.—The favorable results obtained by the lately-devised vibration treatment have led LASKOWSKI (Deut. med. Woch., Apr. 3, 1901) to apply the method to certain lesions of the urinary tract. He uses an ordinary curved sound to the broad end of which a form of clock-spring is firmly attached. The vibrations are generated by striking the spring with a short leather-covered stick at definite intervals. A size of sound is selected which will produce a slight stretching of the urethral walls. The best effects have been secured by its use in disturbances of the nerves and musculature of the urethra, incontinence, residual urine, sexual neurasthenia. Phosphaturia and prostatorrhea were also benefited. The only contraindications are acute inflammations and the presence of the gonococcus.

Atoxyl, a New Arsenic Preparation; Its Use in Skin Diseases.—Atoxyl is a white odorless powder containing about 37 per cent. and soluble in five parts of warm water. Before attempting its use in practice, W. SCHILD (Berl. klin. Woch., Mch. 31, 1902) studied the toxic effect of the drug in animals and found its toxicity to be only one-fortieth that of the quantity of arsenic which it contains. Hence, it affords a means of introducing into the system a larger volume of arsenic than can be introduced safely by any other means. Small doses by mouth readily produce gastric disturbance. Hence, Schild soon decided to administer the drug only by hypodermatic injection. Beginning with 0.04 gram of a 20 per cent. solution, the dose is gradually increased until it reaches 0.2 gram, at which point it remains during the remainder of the period of treatment. Temporary discontinuance of treatment is occasionally necessitated by the appearance of chills, dizziness and headache.

Favorable results were obtained by Schild in cases of psoriasis, lichen ruber and other chronic dermatoses. While atoxyl will not effect a complete cure of psoriasis unaided by external treatment, neither will other forms of arsenic. It, however, materially aids and quickens the action of external treatment. In fourteen cases of lichen ruber treated exclusively by atoxyl injections complete cures were obtained without a single exception. The average duration of the period of treatment in these cases was fifty days.

Ultraviolet Rays in Skin Diseases.—The ultraviolet rays may be recognized by the following properties: (*a*) They are powerfully actinic. (*b*) They can excite fluorescence. (*c*) They can discharge an electrified body provided the body is negatively electrified. (*d*) They have a special action on the skin of the higher animals and on the entire tissues of the lower animals and plants. (*e*) They can produce nuclei for cloud condensation in moist air. DAWSON TURNER (Brit. Med. Jour., Mch. 22, 1902) describes some experiments he has made with these rays and the form of apparatus which he has found most convenient and practical for their therapeutic employment. He finds that the spark-gap radiation from a condenser is more powerfully actinic than that from an arc light. The chief difficulty in dealing with these rays, however, is the fact that glass is impenetrable to the extreme and most potent part of the ultraviolet rays, hence, the refraction prisms used must be composed of something other than glass. Ice, quartz, pure water, grape sugar and gypsum all offer less obstruction to the rays than does glass, but pure rock salt proved to be the most easily permeable substance found. It has this disadvantage, however, that in the presence of moist air a film of moisture collects on the surface of the salt prism and seriously interferes with the refraction. One great advantage of the spark gap of a condenser over the arc light is that its heat radiation is practically *nil;* it can, on account of this, be brought to within an inch or less of the patient's body. Rodent ulcers treated with this form of apparatus after failing to respond to the X-ray have been cured in three sittings.

Urotropin in Urinary Infections.—Tests of the inhibitary and germicidal powers of urotropin with cultures of staphylococci, B. coli, and B. typhosus, have been made by J. O. SYMES (Bristol Med.-chir. Jour., Mch., 1902). He found that these cultures when mixed with an acid urine with urotropin in solution, 1 to 1,000, showed an inhibited growth. The bactericidal power was most marked with B. typhosus. Alkaline urine decreases this property. The action of urotropin is not well marked in pyelitis or pyelonephritis, because the organisms are deeply embedded in the tissues and the urine is often alkaline. The best results are seen in cases of cystitis secondary to enlargement of the prostate, because the bladder-walls are not deeply penetrated and the urine on leaving the kidney is acid. In gonorrheal cystitis, symptoms were relieved, but it was possible to detect the diplococcus even in the acid urine. Cystitis due to B. coli, often seen in women, does not yield readily to urotropin, as this organism appears to be peculiarly resistant to the drug.

Nature of Prostatic Hypertrophy.—For many years it has been the consensus of opinion that a true tumor formation was present in the prostatic hypertrophy of the aged and that the prostatitis associated with urethritis in young men was another affair. During the past few years, however, several investigators have shown that the purely myomatous or fibrous form of prostatic hypertrophy is extremely rare and that a chronic inflammatory process is the main etiological factor in this condition. From the histological study of a large number of specimens, R. H. GREENE and H. BROOKS (Jour. Am. Med. Jour., Apr. 26, 1902) find marked confirmation of the latter idea. In a series of 58 cases studied, all showed evident inflammatory lesions. In 41 the increase in size was entirely or chiefly due to fibrous proliferation, but in 36 inflammatory infiltration played a leading or contributory rôle, and in 191 cystic distention of the alveoli was present in sufficient degree to increase notably the size. Six tumors were present, 3 fibroid and 3 carcinomatous. It is generally recognized that interstitial hyperplasia after adolescence is the result of inflammatory disease. In the young this process may cease after removal of the cause and retraction and atrophy follow from sclerosis of the fibers, but in the middle-aged or old man resolution does not readily follow and the condition becomes chronic, with increased fibrosis, thickening of the vessel-walls and chronic congestion. To this, secondary changes may be added and prostatic hypertrophy results. As for the origin of this inflammation the authors believe it to be due to a chronic posterior urethritis of whatever cause. They also conclude that the rare prostatic neoplasms are not concerned in the production of true prostatic hypertrophy, but that carcinoma may occur in the hypertrophied prostate as a result of the chronic inflammatory process.

The Justus Test for Syphilis.—The claim has been made that the hemoglobin estimate taken twenty-four hours after the injection of or inunction with mercury showed a drop of from 10 to 20 per cent. and that the test was found only in syphilis and held good before the advent of secondary symptoms. Several contributions to the discussion of this subject have lately been made. TUCKER (Phil. Med. Jour., May 10, 1902) finds that the Justus test has no practical value in the differential diagnosis of venereal ulcers, since the reaction occurs with an almost equal degree of frequency in the non-syphilitic conditions with which syphilis may occasionally be confused. The summary of his cases, with the percentages of positive results, is as follows: 13 cases of the initial lesion with 38 per cent.; 7 of chancroid with 57 per cent.; 3 of herpes with 100 per cent.; 3 of genito-urinary tuberculosis with 33 per cent.; 1 of pustulo-crustaceous syphilide with 0 per cent. A similar conclusion is reached by W. E. Huger, who finds in 6 cases of chancre a positive reaction in 50 per cent.; in 3 of chancroid, 50 per cent.; in 4 of chancres with secondaries, 50 per cent.; in 3 control cases, 0 per cent.

PATHOLOGY AND BACTERIOLOGY.

Bacteriology of Erysipelas.—In connection with the much-discussed etiology of this disease, G. E. PFAHLER (Phil. Med. Jour., Apr. 19, 1902) reports the results of his investigations in a series of 98 cases. In 86 of these certain diplococci were found which he submitted to the usual culture tests and describes specifically as spherical cocci, usually occurring in pairs, within or without the leucocytes, and at times apparently encapsulated. This diplococcus stains readily by aniline gentian-violet, by carbol-fuchsin, and by Gram's method. It is aerobic and grows best at 31° C. It is non-motile. Glycerin-agar shows minute opaque colonies in twenty-four hours, blood-serum a more luxuriant growth. Gelatin is not liquefied; no growth upon potato. Bouillon cultures injected into rabbits produced distinct erysipelatous inflammations from which the identical diplococcus could be isolated. The author believes that this coccus is the most common cause of erysipelas or of a disease which cannot at present be differentiated from it. Koch's postulates have been demonstrated with reference to the organism.

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SATURDAY, MAY 31, 1902.

SUICIDE AND INSANITY.

THE prevalent notion that suicide is always an insane act is erroneous; no act by itself alone is evidence of sanity or insanity. In non-suicidal races suicide is strong presumptive evidence of insanity. In very suicidal races it is no evidence either way. Indeed, under certain conditions it may be an evidence of sanity. There is in India a caste of carriers who are noted for the care taken of articles intrusted to them. If one be attacked by robbers he solemnly tells them that he will kill himself. Whereupon, on their persistence, he kills himself and the caste of carriers is bound to hunt down and destroy the robbers and their families. Under the army system soldiers often commit legal suicide by killing an innocent child who is sure to go to heaven and thereby compelling the law to execute them, giving time for religious consolation. Homicide for suicide purposes has lately occurred in Bavaria. In the early part of May, 1902, a tailor of Munich was convicted of murdering the ten-year-old daughter of a neighbor and was given fifteen years at hard labor. The tailor, having been jilted, determined on suicide, but, believing that suicides do not enter heaven, he decided to commit murder so that he might have religious consolation before being executed. He first determined to murder his sweetheart, but was deterred by the fear that he would endanger her hereafter by sending her to her doom unprepared. He then decided to kill an innocent child who was sure of heaven. He was placed under observation in an insane hospital, but the physicians declared that he was sane. He was thereupon tried and intentionally convicted of manslaughter by the court so that he should receive a penitentiary sentence in place of the capital sentence which he desired.

Homicides of this kind are far more frequent than is usually suspected.

The suicide-rate in European armies far exceeds the rate of the country to which the army belongs. The German army has a suicide-rate of 670 per million; the Italian army, 400; the Belgic, 240; the English, 230; the English-Indian, 480; the Russian, 200; the Spanish, 140. The English-Indian rate is due to the depressed and suspicional states produced by moist heat. The suicide-rate of the French Army of the Interior fell from 470 under the Empire to 290 under the Republic. The African army of France has a rate of 630 per million, probably from causes similar to those affecting the English-Indian army. The increase of suicide among Americans in the Philippines is in the same direction. The United States suicide-rate is double that of the Irish and about one-half that of the English.

A large number of cases of accidental death among the insane are charged to suicide when in reality a fatal accident occurred in an attempt to escape from fancied peril. The most determined of insane suicides are those affected by melancholia, especially the cases which exhibit only emotional depression and are regarded as perfectly sane. Some of the early Christian sects compelled suicide by outraging the religious sense of the polytheists to secure the crown of martyrdom. Less than a decade ago two Russian sects buried voluntary victims of sacrifice until the Government interfered. These sacrifices were atonements for the sins of the world. A very similar case was that of an Italian paranoiac who deliberately set about the manufacture of a cross and all the necessaries for crucifixion. Perceiving it would be difficult to nail himself firmly to the cross he made a net which he fastened over it. Securing it at the bottom of the upright beam a little below the bracket he adjusted it for his feet and at the ends for his two arms. The whole apparatus was tied by two ropes, one from the

net and the other from the place where the beams intersected each other. The ropes fastened to the bar above the window were just long enough to permit the cross to lie horizontally on the floor of the room. These preparations finished he put on his crown of thorns, some of which entered his forehead. Stripping himself naked he girded his loins with a white handkerchief. Then he introduced himself into the net and seating himself on the cross drove a nail into his right palm by striking its head on the floor until the point appeared on the other side. He placed his feet on the bracket and with a mallet drove a nail through each of them, and thus fastened them to the wood. He then tied himself to the cross by a piece of cord around his waist, after which he wounded himself with his shoemaker's knife in the left side, but failed to injure any important organ. He had made several scratches on his breast to determine the place of least resistance. The knife represented the spear of the crucifixion. This was done in his room. In order to show himself to the people he placed the foot of the cross upon the window sill, which was very low, and by pressing his fingers against the floor he gradually drew himself forward until, the foot of the cross overbalancing the head, the whole machine tilted out of the window and hung by two ropes fastened to the beam. He then nailed his right hand to the arm of the cross, but could not succeed in fixing the left, although the nail by which it was to be fixed was driven through until half of it came out on the other side. After hanging thus an hour he was noticed, detached from the cross and put to bed. He recovered from the wounds, but his mental state remained morose, tactiturn, and solitary.

While suicidal tendencies in children are far from infrequent, suicidal acts are rare. This is due to the mobility of the child temperament. The exciting cause of the suicide is usually trivial. One boy in Germany killed himself to get rid of "so much dressing and undressing." With the increasing social tendency to expose children to financial and other mental stress at the critical period antecedent to puberty, suicide, insanity and criminality must, as Kiernan remarked a decade ago (*Medical Standard*, Vol. XII., p. 62), in the nature of things increase. Sanitarians should pay a little more attention to the labor demanded from children. It is a disgrace to American civilization that the almighty-dollar Moloch should require so many infantile sacrifices.

BEEF-JUICE IN INFANT-FEEDING.

MUCH has been recently said of the evils of feeding beef-juice to children during infancy. There is good reason to think that during the period of literal infancy, that is, the non-speaking first two years, beef-juice is not to be employed as a regular article of diet, unless especially indicated. There seems no doubt, however, that at times its employment is not only justifiable, but entirely in accord with rational thought in the etiological treatment of infantile affections.

Of late years we have become familiar once more with scorbutic affections in children. It was thought that with our greater attention to dietary regulation, such ailments would not occur unless very exceptionally in our modern life. In these cases beef-juice has appeared to many specialists in children's diseases to supply most suitably the salts whose deficiency in the child's previous diet gave rise to the scorbutic symptoms. Its employment is much more consonant with the idea of treating the child through modifications of its food than by the use of remedial measures of other kinds. Even the vegetable and fruit acids must be considered somewhat in the light of chemical remedies for a condition the exact origin of which is unknown, and whose chemism is at best not completely understood.

Perhaps no more startling bit of information has ever been furnished the medical world than the announcement during the preceding generation that the much-prized bouillon and beef-tea of our forefathers was a good stimulant, but not a nutrient. It had often been said that a pint of beef-tea contained almost the entire nutritive qualities of a pound or more of beef. The introduction of extract of beef seemed to furnish concentrated food in eminently palatable and digestible form. Travelers and explorers carried it with them with this idea and they were not disappointed in it. Experience proved that there was nothing so uplifting after severe fatigue as this cup that cheered, but did not intoxicate. Then came the chemical revelation that it was not because of any nutritive value, but because it was a natural stimulant that extract of beef gave its excellent results. Beef-extract proved to be not essence of beef, but mainly a composition of the organic meat salts and extractives that are at once tonic and appetizing, though not purveyors of nutrition.

The revulsion of feeling occasioned by the unexpected announcement of a deficiency of nutritive value where so much had been predicted led

to the depreciation of meat preparations of all kinds. Meat-juice and other materials that contain large quantities of the albuminous portions of meat shared in this condemnation. As always happens in the history of medicine, the pendulum of medical opinion swung too far to the other extreme. It is under the influence of this other and equally fallacious exaggeration of opinion that we hear meat-juice preparations so unsparingly condemned by certain clinical authorities who do not know the actual chemical status of these substances. Not a little has been said recently with regard to the merely stimulant effect, especially when employed as an ingredient of infantile feeding. Needless to say, the properly expressed juice of meat is a precious concentrated, yet readily digestible, food. To speak of meat-juice as "beef cocktail" is to misapprehend entirely its nutritive significance and to mistake its chemical contents. Properly prepared beef-juice is stimulant, but this effect is only of secondary importance compared to its positive nutritive value. To confound beef-extract and beef-juice is to make a serious error. To condemn one because of the other is to deprive the physician of a very important practical auxiliary in the treatment of exhausted conditions, no matter whence derived and whether occurring in adults or in children. *Medio tutussimus ibis*—there is safety in a middle course. Beef-juice is not a remedy for every disturbance of nutritive metabolism in the child; it is, however, a very precious accessory to other natural and drug methods of treatment, and its indications and limitations should be studied further. Its value will repay the investigators.

A DESERVED TRIBUTE TO SURGEON-GENERAL STERNBERG.

ON June 13th, as we announced in our last issue, a complimentary dinner is to be tendered to Surgeon-General Sternberg here in New York. The occasion is the retirement of the Surgeon-General because of the age limit. The committee under whose auspices the dinner is given is made up of representative members of the medical profession from all parts of the country.

The retiring Surgeon-General deserves well the tribute thus to be conferred on him. His services to the Army Medical Corps put not only the medical men of the army, but the whole profession of the country under obligations to him. His contributions to the scientific side of medicine have brought honor not only to himself, but to American medicine.

Surgeon-General Sternberg's work in the nascent science of bacteriology during the penultimate decade of the nineteenth century will not soon be forgotten. It did more than anything else to make the foreign scoffers at scientific medical progress in America pause. He was practically the first to show how much the enterprising spirit of American medical men might accomplish when once they set seriously at work at investigation rather than money-making. A change has come over the situation since then and all now acknowledge the worth of the work being done in America. For this happy change Surgeon-General Sternberg's example is not a little responsible.

Sternberg's work on yellow fever, although uncompleted, will ever remain as a monument to the man and his thoroughly conservative spirit of investigation. In those early days of bacteriology it would not have been hard to persuade one's self that some one of the many bacteria found was the specific cause of the disease. The announcement of such a discovery would have meant immediate fame. Sternberg's investigations were carried out amid the greatest possible dangers, but his judgment remained perfectly stable and though many microbes were isolated, no rash announcements were made. Several reputations have since been achieved out of repetitions of the observations he then made, but his work stands as a model of calm conservative investigation.

The medical profession of the country honors itself in honoring such a man. We join heartily in the felicitations that are preparing for the occasion. We are sorry to think of Surgeon-General Sternberg's retirement from the post in which he has accomplished so much good, and we wish him many years of happy enjoyment of the satisfaction of duty well done, which must surely be his under the circumstances.

ECHOES AND NEWS.

NEW YORK.

Coney Island's Hospital Opened.—The Reception Hospital, which is in Sea Breeze Avenue, Coney Island, was reopened this week for the summer, under the charge of Dr. John Burns of the Kings County Hospital. During the summer months last year it treated 1,300 patients.

Lebanon Hospital Gets $60,000.—The ninth annual meeting of the Lebanon Hospital at Westchester and Cauldwell Avenues in The Bronx was recently held at

the hospital. The old officers were reëlected. The President, Jonas Weil, announced that Mrs. Clara Simon, whose husband died three years ago, has given $60,000 cash to the hospital.

Possibly Plague.—The British steamer "Eleanora Mail," which arrived recently from Pernambuco, was detained at quarantine with a case of sickness on board, the character of which could not be determined. The patient had a swollen gland. He was taken to Swinburne Island for examination. Bacteriological tests were made and showed the case to be not one of plague.

The Charles Rice Memorial Committee.—The Board of Trustees of the College of Pharmacy of the City of New York, in conjunction with the Committee of Revision of the U. S. Pharmacopœia, have appointed a Memorial Committee whose duty it is to solicit funds for the purpose of placing a suitable monument over the unmarked grave of the former Chairman, the late Dr. Charles Rice, and to defray the expenses of preparing a Memorial Volume, to contain his portrait and a sketch of his life and labors. All are invited to contribute to this fund who appreciate the labors of this great genius who sacrificed so much in the cause of medicine and pharmacy, directing three decennial revisions of the United States Pharmacopœia, the latter of which, as an authoritative and model work, is unequaled by that prepared by any other Committee. All contributions should be sent to either of the following: Virgil Coblentz, 115 West 68th Street, New York City; S. A. D. Sheppard, 1129 Washington Street, Boston, Mass. The Memorial Committee consists of the following members: Prof. James H. Beal, Scio, Ohio; Prof. Virgil Coblentz, N. Y. City, N. Y.; Charles E. Dohme, Baltimore, Md.; Prof. Henry Kraemer, Philadelphia, Pa.; Prof. Joseph P. Remington, Philadelphia, Pa.; Samuel A. D. Sheppard, Boston, Mass.; Prof. Reynold W. Wilcox, N. Y. City, N. Y. This is a most worthy movement in honor of a man who was little known to medical practitioners, yet who made the standards of the Pharmacopœia what they are, the equal of any and the superior of most similar works.

Presbyterian Hospital Alumni Dinner.—An address was made by Dr. Briddon before the Society of the Alumni of the Presbyterian Hospital in the City of New York on May 17th, when the Society met for a dinner at the Arena. Some forty-five members with honorary members and invited guests were present. Following the dinner and the address by Dr. Briddon, other addresses were made by members of the visiting and consulting staffs of the Hospital and by Dr. Booth, President of the St. Luke's Alumni Society. A letter from Dr. Briddon was read in which he presented to the Society a gold medal to be awarded every two years to that member of the Society of the Alumni of the Presbyterian Hospital presenting the most meritorious original essay on a medical, surgical, bacteriological or pathological subject. The medal is to be awarded by a committee of three from the medical board of the Hospital and the successful essay is to be published in the Presbyterian Hospital Medical and Surgical Report. In the event of none of the essays being of sufficient merit, the fund for the medal is to be used for the purchase of medical works for the library of the Hospital. The medal to be first awarded was exhibited. It contains on its obverse a copy of a Greek bas-relief representing Æsculapius greeting his disciples. A vote of thanks was presented to Dr. Briddon for his kind offer which was accepted.

A Long Criminal Ancestry.—According to the statement of a Mrs. Annable at a recent meeting in New York "a woman of criminal tendencies, whose occupation was the keeping of a disreputable house and whose habits were of the lowest, including excessive indulgence in alcoholic stimulants, died when she was fifty-one years old. That was in 1827. Her descendants have now been traced. They number eight hundred. Seven hundred of them are criminals, having been convicted at least once. Three hundred and forty-two of them are drunkards, acknowledged by all as such. One hundred and twenty-seven are immoral women. Thirty-seven of them were murderers and were executed for their crimes. This family has cost the nation $3,000,000, this being the sum paid out for their trials and executions."

The Good Fortune of the Long Island College Hospital.—In memory of his brother, the late Henry W. Maxwell, J. Rogers Maxwell will erect a new home for the Long Island College Hospital at a cost of $400,000. The bulk of the estate of Henry W. Maxwell, amounting to $3,000,000, was bequeathed to his brother. During his life Mr. Maxwell, who was president of the Board of Regents of the hospital, presented $100,000 to the institution toward the erection and maintenance of the training school for nurses connected with the hospital. It is rumored that the Board of Regents purposes changing the name of the hospital to the Maxwell Long Island College Hospital. This will be done as soon as the new building is completed. The new building will be at Henry and Amity Streets. It is to be simple in design and of brick, with stone trimmings, and fireproof. In all, four pavilions are to be built, and those now used by the institution torn down. In order, however, that the hospital may not be without a home, a new pavilion will be erected before an old one is demolished. Though the plans are not completed it has been decided to build a modern and well-equipped hospital. The main structure will be five stories in height, and the one which will contain the private wards may be higher. They will be known as the private, central, north and south ward buildings, and will be connected by corridors enclosed in glass, which will also be used by the patients as sun-bath rooms.

Gift to the General Memorial Hospital.—It is announced that Mrs. Collis P. Huntington has offered the sum of $100,000 to the General Memorial Hospital for the Treatment of Cancer and Allied Diseases, at One Hundred and Sixth Street and Central Park West, for pathological purposes. The announcement is made in the report of the President of the hospital, John E. Parsons, included in the annual report of the hospital just made public, as follows: "It affords me very great gratification to record the fact that during the past year Mrs. Collis P. Huntington has proposed to put at the disposition of the hospital the sum of $100,000, to constitute a Collis P. Huntington fund, the income from which is to be used for pathological research. Our warmest thanks will be due Mrs. Huntington and her son, Mr. Archer M. Huntington, who is a member of our board, should this intention be carried out." The General Memorial Hospital was opened for patients in the winter of 1887, and for some years was known as the New York Cancer Hospital. Its work, however, is not limited to cancer. The report for the last year shows that 929 patients were treated, and that the total number of operative cases was 824. In all 1,146 operations were performed.

Dinner to Surgeon-General Sternberg.—Those interested in obtaining tickets for the dinner to Surgeon-General Sternberg may do so by sending $10 to Dr. Hermann M. Biggs, 5 W. 58th Street, New York City.

A Book Swindler among the Medical Students.—An agent for a certain publisher of lay works is trying to swindle the medical students of New York City by an old dodge. He gets the student to sign his name on a piece of paper under the guise of

sending him a sample copy of their publication, and subsequently the student finds he has signed a contract for some fifty to a hundred dollars' worth of books, the small piece of paper on which he signed his name being the end of a contract blank turned over.

New York Academy of Medicine.—A stated meeting will be held Thursday evening, June 5th, under the auspices of the Section on Ophthalmology. The following papers will be read: Contagious Ophthalmia in Industrial Schools, Asylums, and Lying-in Hospitals, by Richard H. Derby, M.D.; Modern Methods Employed in the Prevention and Treatment of Trachoma and Other Forms of Contagious Ophthalmia, by Kark Koller, M.D.; The Laws of the State of New York Relating to Contagious Ophthalmia, the Results of Their Enactment, and the Desirability of Farther Legislation, by Frank Van Fleet, M.D. Discussion by Drs. Charles S. Bull, Peter A. Callan, John E. Weeks and others.

PHILADELPHIA.

Bequests to Institutions.—The will of the late James H. Grier of Doylestown bequeathes $10,000 each to the Presbyterian and Hahnemann Hospitals of this city and $5,000 each to the Old Men's Home and the Presbyterian Orphanage.

New Hospital at Chester.—The Crozer Homeopathic Hospital to cost $125,000 has been begun at Upland adjoining the Lewis Home for Incurables. The main building will be 50 by 100 feet in size.

Vancancies in College Faculties.—Just at present there seems to be a slight reaction in the medical schools of this city against the modern tendency to specialism. The chair of genito-urinary surgery at the Medico-Chirurgical College, made vacant by the retirement of Dr. E. R. Kirby, is not to be filled, the general surgeons doing that work. The chair of ophthalmology at Jefferson, made vacant by the resignation of Dr. G. E. De Schweinitz, is to be left vacant for the present at least, the work of that department being taken by the clinical professors. A member of the Board of Trustees of Jefferson College is quoted as saying: "There has grown in the last few years too much 'specialism' in medicine—that is, as far as the undergraduate student is concerned. There is now crowded into the four-year course which the student must pursue an enormous amount of work. The greater amount of this teaching is necessary to a thorough knowledge of medicine, but there are being taught and elaborated many subjects which the student when he receives his degree cannot make use of in his daily practice, and the aim is to attach less importance to the specialty and spend more time on the fundamentals of medicine—that is, the principles and practice of medicine, therapeutics and surgery. It is our wish to turn out students thoroughly drilled in these fundamentals, and then, after he has passed the State Board of Medical Examiners and wishes to know more of a special branch, the physician can gain such knowledge by post-graduate work."

Indications that Present Methods of Fumigation are not Effective.—At the meeting of the Pathological Society, May 22d, Dr. G. E. Pfahler read a paper on this subject. The paper was based on investigations made at the Philadelphia Hospital where Dr. Pfahler is assistant chief resident physician. The fact that epidemics broke out in the children's wards soon after they had been fumigated with formaldehyde gas led to the investigations. As an experiment, cultures of the staphylococcus were placed in close proximity for some time to the current of formaldehyde gas as it issued from the generator. All the cultures grew well. Inoculations were then made from the floor, mantels, and bed of a room which was then fumigated, three times the ordinary amount of gas being employed. After a number of hours inoculations were again made from the same places. The inoculations made after fumigation grew as well as did those made before. Cultures were then made from a room of 700 cubic feet in size after fumigation for different lengths of time, one, two, four, five, six, nine, and thirteen hours, respectively. During the latter length of exposure 32 ounces of formalin were used and the room allowed to remain closed for fifty-six hours. All the cultures made after each exposure grew. No attempt was made to isolate the different organisms. Dr. Pfahler stated that their investigations led them to believe that the other precautions always taken in addition to fumigation, namely, scrubbing the room and furniture and sending the clothes to the laundry after fumigating them, had probably more to do in keeping down epidemics than had the fumigation.

Dr. Joseph McFarland said that he had examined the various generators as they appeared on the market and finds that none of them do the things claimed for them. At the same time it must be remembered that formaldehyde gas is only a superficial disinfectant and that it does not diffuse readily. Notwithstanding these objections to the generators and to the gas itself, it is of great value, especially so because the organisms it is most needed to destroy, such as typhoid, cholera, and diphtheria bacilli, are of low resisting power. Aerial and surface disinfection are accomplished by the use of formaldehyde, clothes, the floor, etc., must be otherwise disinfected.

Diagnostic Value of Ganglionar Lesions in Hydrophobia.—Drs. M. P. Ravenel and D. J. McCarthy discussed this subject and presented a further report of cases. They have now studied three human beings and 105 animals. The changes in the central nervous system in persons and animals dying from hydrophobia are (1) the accumulation of round cells around the vessels and (2) the presence of the tubercles of Babes. The changes in the intervertebral ganglia, to which particular attention was called, are chromatolysis, vacuolization, and the accumulation of round cells around the vessels. These are only specific when they occur without any changes in the peripheral nerves. Any lesion of the peripheral nerves, unless it be an old chronic condition, excludes hydrophobia. Of the 77 dogs studied 66 were found to be positive and in 60 of these the diagnosis was made within thirty-six hours. There was not a doubtful case in the dogs studied and, although only a few human beings were studied, the lesions are believed to be as positive for diagnosis as they are in the lower animals. The fact that none of the dogs were doubtful is of value as these are the most important cases for rapid diagnosis. The conclusion of the speakers was that the lesions in question are absolutely diagnostic for practical purposes.

Obituary.—Dr. James Rose, a prominent surgeon of Waynesburg, Penn., died May 21st as the result of being struck on the head with an empty bottle thrown by a boy with whom he had a dispute.

Dr. Allen H. Hulshizer, a well-known physician of this city, died May 19th, aged fifty-one years. He graduated from Jefferson College in 1878 and was prominent in medical and business circles. He was for some years a member of the State Board of Medical Examiners.

CHICAGO.

Fibrosarcoma of the Soft Palate and Tonsil.—Dr. Charles M. Robertson recently reported the case of a farmer, aged sixty-two years, who, while picking his teeth with a straw, pricked the left tonsil, causing only slight pain. In a few days he noticed a small swelling

of the left tonsil, which increased rapidly in size until the end of eight weeks, when he presented himself for relief. At this time the patient experienced great difficulty in breathing and it was almost impossible to swallow food. Upon examination, a large tumor was found occupying the left palatal arch, well down to its base, involving the tonsil and side of the pharynx as far as the epiglottis, and up behind the edge of the hard palate as far as the left Eustachian tube. It extended forward into the mouth to within one inch of the incisor teeth. The growth was smooth in contour, lighter in color than the surrounding tissues, and firm and elastic to the touch. Under cocaine, a piece of the growth was removed for microscopic examination and pronounced fibrosarcoma. The following week the growth was removed under chloroform anesthesia. It was found to be encapsulated, and on this account a favorable prognosis was made. In looking over the literature he finds twenty-five cases reported of sarcoma of the soft palate and forty-five additional cases of sarcoma in which tonsil alone or the tonsil and the soft palate were involved. In nearly all the cases the growth was removed by external operation and in these cases recurrence was frequent, whereas the encapsulated growths removed by the mouth were not so prone to recurrence. The case under consideration has as yet shown no signs of new growth, twenty months having elapsed, and therefore he feels justified in reporting it as a cure.

Resection of the Superior Maxilla.—Dr. Wm. E. Casselberry showed a case in which an unilateral resection of the superior maxilla had been made on account of intranasal fibrosarcoma. He presented the patient chiefly to demonstrate the degree of deformity resulting. The incision was made from below the orbit around the nose and through the lip, the flap dissected back, and the left maxilla, including the teeth, removed. The man's cheek, however, still has a reasonable prominence. Union has failed along the line of the cleft in the hard palate, so that the patient practically now has an acquired cleft palate. The situation of the growth and a shadow on translumination led him to think the antrum was involved, and this was one reason why resection of the superior maxillary bone was decided on. When he came to shell the growth out, it was disclosed that the antrum was not directly involved, but he is still of the opinion that the operation was justified by the appearance and character of the growth, but more so on the supposition that the antrum was involved. Had he been able to determine that the maxillary sinus was not affected, he would have advised a less extensive operation. There is as yet no definite evidence of recurrence, although the tissue which has partly filled in the space of the cheek-bone does not look entirely natural. Another hazard of the operation concerns the necessity of ligating the common carotid, or at least the external carotid artery in order to control hemorrhage. Following the operation, this patient became paralyzed on the right side; the paralysis has persisted somewhat, but it is gradually becoming less. Inasmuch as the line of ligature of the external carotid is very close to the common carotid, the paralysis might have occurred from a clot going through the common carotid as an embolus.

Concha Bullosa.—Dr. George E. Shambaugh presented a median sagittal section of a nose, showing a large bone cyst in the anterior end of the concha media. The cyst had thin, bony walls, and was lined with smooth mucous membrane. It was 28 millimeters long and 25 millimeters broad, and presented an empty, air-containing cavity, which communicated freely with the middle meatus, with the frontal sinus, with a large ethmoid cell pushed into the frontal sinus, and with the ethmoid labyrinth above and behind. The concha bullosa, or cystic enlargement of the concha media, is usually found as an empty, air-containing cavity, but occasionally it is found the seat of a mucocele or an empyema. As a rule, it is not associated with any inflammatory condition and the enlargement should be looked upon not as a pathologic product, the result of an inflammation, but as an anatomic variation, the result of a developmental anomaly.

Illinois State Medical Society.—The fifty-second annual meeting of this Society was held in Quincy, May 20, 21 and 22, 1902, under the presidency of Dr. John T. McAnally of Carbondale.

Committee on Constitution and By-Laws.—This Committee presented a new document, which was drafted in conformity with the plan of reorganization of the American Medical Association. It was thoroughly discussed, amended, and finally adopted as amended.

Committee on Medical Legislation.—This Committee presented the draft of a proposed bill for the regulation of the practice of medicine and for the establishment of a Board of Medical Examiners in the State of Illinois. The bill was discussed at length and adopted by the Society.

Commencement Exercises.—The College of Physicians and Surgeons (Medical Department of the University of Illinois) held its twentieth annual commencement exercises May 20th. The doctorate address was delivered by Dr. W. S. Christopher. Professor T. J. Burrill, acting President of the University, conferred degrees and announced honors. Dr. S. M. Kyes, valedictorian, responded for the class, which numbered 222.

Officers of Illinois State Medical Society.—The following officers have been elected: Dr. M. L. Harris, Chicago, President; Dr. E. W. Weis, Ottawa, Secretary; Dr. James H. Stowell, Chicago, Assistant Secretary; Dr. Everett J. Brown, Decatur, Treasurer, and Dr. George N. Kreider, Springfield, Editor of the Society's journal. Chicago was selected as the place for holding the next annual meeting.

Ban on Incurable Diseases.—Dr. W. E. D. Wendstrand, medical officer of the day at the Cook County Hospital, declares that a number of people suffering with chronic and incurable diseases are being sent to that institution when they should be sent to Dunning. He advocates sending notices to the various hospitals and announcement to the public that the County Hospital does not admit such cases.

GENERAL.

Russian Physicians.—The number of physicians practising in Russia amounts to 20,092, of which 19,450 are men and 642 are women.

Comparative Sanitary Condition of Armies.—M. Kende of Budapest has made a study of this subject from which it appears that the sanitary condition of the German and French armies is better than that of any of the other European armies. Mortality is thus estimated: Of 1,000 men, Italy loses 9, Austria 6, France 5, and Germany 4. The number of suicides in 100,000 men equals 99 in Austria, 78 in the United States, 51 in Germany, 32 in Italy, 22 in England, 17 in Switzerland, 15 in Russia, 13 in Holland, and 9 in France.

Delaware State Medical Society.—The one hundred and thirteenth annual meeting of this venerable society will be held at Newark, Delaware, June 3, 1902. The program announced contains some interesting features for discussion. Among these will be presented The President's Address, by Dr. E. S. Dwight; Some Causes for Public Objection to Vaccination, by Dr. Wm. C. Pierce, of Wilmington; Smallpox, by Dr.

James H. Morgan, of Wilmington; How Long Should Cases of Diphtheria be Quarantined, by Dr. Robin, of Newark; The Treatment of Pelvic Inflammation and Suppuration in Women, from the Standpoint of the Family Physician, by Dr. Chas. P. Noble, of Philadelphia.

Mississippi Without Records of Mortality.—Discovery has been made that the State of Mississippi tabulates no records of vital statistics. A life insurance company desiring to do business in that State, not long ago, asked the Insurance Department for data covering the mortality experienced during recent years. These the Secretary of State was unable to supply. The necessity for trustworthy statistics exists more in Mississippi than probably any other State, for few commonwealths have so bad a reputation in this regard. At the last session of the Legislature, a bill for the establishment of a department of mortuary and vital statistics failed to pass, although recommended by the Board of Health. All that the Secretary of State could furnish the insurance company were some statistics tabulated by Col. Power, in which the estimate of the mortality was a little under thirteen per thousand inhabitants. To this he appended a certificate of Dr. Hunter, Secretary of the State Board of Health, who is well informed regarding conditions throughout the State, and who states that health conditions in Mississippi to-day are most favorable.

Obituary.—Dr. William Craig Burke died in Cheyenne, Wyo., May 24th, at the home of his son, T. F. Burke, United States District Attorney. He was ninety-five years old. He was a graduate of Dartmouth College, class of 1833, and was the oldest living alumnus. He was a member of the church council which tried the Rev. Henry Ward Beecher.

Dr. William H. Watkins of New Orleans is dead in Milwaukee, where he had gone on account of his health. He was a native of New Orleans and fifty-four years old. He entered the Confederate Army as a boy of fifteen and rose to be captain of cavalry when only eighteen. Entering the medical profession he was chief medical inspector of the New Orleans Sanitary Association, chief inspector of the New Orleans Board of Health and a member of that body, editor of the "New Orleans Medical and Surgical Journal" and chairman of the Yellow-Fever Board during the epidemic of 1897.

Dr. John Vedder, President of the New York State Antivivisection Society, died at his home, Saugerties, N. Y., May 22d. He was eighty-six years old. He was a classmate of Oliver Wendell Holmes at Pittsfield, Mass., Medical College, and was graduated from the Herkimer, New York, Medical College. He was one of the oldest practising physicians along the Hudson River.

CORRESPONDENCE.

FOREIGN SOCIETIES.

German.

OPERATIVE REMOVAL THROUGH THE VAGINA OF TUBAL PREGNANCY—BRAIN SURGERY—MODERN TREATMENT OF BONE FRACTURES—SURGICAL TREATMENT OF PUERPERAL PYEMIA—ENCYSTED PROJECTILES IN THE HEART.

DURING the past month the medical and scientific societies of Germany have held a number of important meetings from which the following selections have been made:

P. STRASSMANN, at the Berliner Medicinische Gesellschaft, March 19, 1902, stated that the formerly assumed infrequency of extra-uterine pregnancy is not established by modern researches. In fact its relative frequency is not astonishing if one accepts the supposition that the fertilization of the ovum takes place, not in the uterus, but in the fimbriated extremity of the tube, which is a well established physiological fact, so far as animals are concerned. Therefore any factor which checks the progress of the ovum toward the uterus may cause extra-uterine pregnancy. Examples of such conditions are inflammatory residua, excessive length of the tube, etc. Operative interference should always be resorted to. The author has had in his practice nine cases of extra-uterine pregnancy upon which he has operated through the vagina, once on account of recent rupture, twice for mole formation, and six times for tubal abortion. In these patients he also found at the same time numerous other pathological accompaniments, for example, cysts of the ovary, tears in the perineum, etc. In operating upon these cases by the vagina, he sometimes opens the anterior wall; at other times the posterior wall. Traction of the uterus downward is not necessary, because the relaxed condition of the broad ligament on the affected side permits the tube, as a rule, to be easily drawn down through the wound. As a rule the ovary should be left behind. The opposite side must always be inspected as a precaution, while the wound is open. Lysoform is the means of disinfection upon which he has most distinctly relied. For the success of vaginal operation in such cases it is essential that the pregnancy be not more than four months advanced. Its indications are, briefly recent rupture, hemorrhage and other similar severe symptoms. Laparotomy should be done whenever the diagnosis is in doubt, for the purpose of distinguishing between this condition and that of appendicitis, of perforated ulcer of the stomach, and the like. When sufficient skilled assistance cannot be obtained and when bleeding is very active, laparotomy is the preferable operation. As to diagnosis, he believes that whenever there is a history of irregularity in menstruation, accompanied by pain, one may suspect extra-uterine pregnancy.

F. KRAUSE, at the Verein für Innere Medicin in Berlin, March 17, 1902, read a paper on brain surgery, comprising a review of the present status of this subject and a report of his cases. Brain surgery, as Von Bergmann has said, is a surgery of the motor area alone, but at the present time other areas are being approached with success. Operation is indicated in Jacksonian epilepsy, abscesses, tumors, foreign bodies and plastic work. So far as epilepsy is concerned, it is well established that brain surgery applies only to pure cases of Jacksonian epilepsy, and the standard of cure is that five years of entire freedom from symptoms must elapse before a cure can be proclaimed. It is hardly fair to speak of any case as improved in this disease, because there can be but two true classes, the cured and the uncured. To illustrate this point he reported the case of a two-year-old child on whom he had operated for encephalitis. Two years later the child was attacked with epilepsy and remained a victim of the disease in severe form. When it was sixteen years old he again operated and removed a cyst. The child has remained perfectly well since 1894. All its mental faculties have returned. He has failed in a number of cases in which he had removed the diseased area of the brain tissue, although there was present neither tumor nor cyst, following the dictum of Victor Horsley. He has by this procedure obtained a probable cure in only one case by extirpation of the facial center. Brain neoplasms, especially cysts and foreign bodies, he has treated more successfully by operation. In a workman, thirty-one years old, the victim of an injury to the skull, who developed pains, which seemed to proceed from the opposite point of the head, namely by contrecoup, and

could be ascribed to scar, to cyst, or to the like, which had appeared in this area. At the operation a number of cysts were evacuated. After an uncertain degree of improvement the patient was discharged from the hospital, but after a few days sudden death occurred. The autopsy showed cysticercus racemosus. Tumors and abscesses of the cerebellum are no longer considered quite unoperable. One great difficulty arises from the fact that no one can say in which hemisphere of the brain such an abscess lies. For this reason he lays bare both hemispheres. He has operated upon three patients in such a manner without death. It is a severe procedure, but it is justified by the fact that without it all of these patients would without doubt have died. Foreign bodies were illustrated by a bullet which he had removed from the upper surface of the petrous bone with entire success. He then described a case in which the point of a knife blade had broken off in the posterior fossa of the skull where it produced an abscess. Abscesses following otitis media he has operated upon with great success. In one patient an abscess of the cerebellum was evacuated, but death followed as a result of thrombosis of the lateral sinus. He operated on a patient suffering from the latter condition four years ago, after ligature of the internal jugular vein. Death occurred later through infection of the lymphatics. Plastic work for covering defects of the bones of the skull has met with variable success, but best by following the method of Koenig, which entails a removal of the outer layer of the neighboring bone and transplantation of it over the defect. If no pus be present, success is almost sure to follow it.

BIER, at the Greifswalder medizinische Verein, Feb. 1, 1902, presented data concerning the more modern progress in the treatment of bone fractures. To the X-ray is due most of the credit for the great advances made in the treatment of fractures. It not only assists in making the diagnosis, but permits the reduction to be made with great exactitude. The ambulatory dressings, first introduced by Hessing and improved by Krause, are another step in advance. The recognition of the fact that to lie a long time in bed with fixed dressings is rather disadvantageous, while a rather frequent change of splints with massage, active and passive movements of the neighboring joints are now considered advisable. At the present time Bier, acting on Petersen's suggestion, is treating all fractures in the neighborhood of joints, especially when the radius is involved, without any fixed dressings. He simply applies firmly to the wrist a splint in which the forearm can be carried much as if in a sling. In fractures at the neck of the femur in old people, Bier places the thigh between sand-bags and then endeavors to prevent atrophy of the bone by percussion upon the sole of the foot and upon the trochanter and by early movement and massage.

TRENDELENBURG, at the Medizinische Gesellschaft zu Leipzig, Feb. 11, 1902, read a paper on the surgical treatment of puerperal pyemia. He remarked that on several occasions he has attempted to check puerperal thrombotic pyemia by tying the veins efferent from the affected regions, namely, the hypogastric and spermatic veins. The ligature of the veins was done extraperitoneally after freeing the peritoneum through an oblique incision above Poupart's ligament. One patient cured by this procedure was presented to the society. In other cases, in which the disease had progressed too far, an unfavorable result could not be prevented.

RIETHUS gave a demonstration of a gunshot wound of the heart with the bullet encysted in the muscle. The patient seven months ago had been shot in the breast with a 6 mm. revolver. Immediately thereafter he showed severe collapse and was unconscious for six hours; the wound of entrance was at the middle of the sternum, at the level of the articulation of the fourth rib; there was no wound of exit, no hemopericardium, no hemothorax; the action of the heart was at first very feeble, but regular. After twenty-four hours, almost complete recovery from the shock and later a recovery without incident occurred. Later there appeared a temporary high-grade irregularity of the heart action without anything to point directly to damage of the heart muscle. After an examination with the X-ray the shadow of the bullet was found in the middle of that of the heart muscle and moving synchronously with the movements of the organ. The position of the bullet was assumed by the author with a fair degree of probability to be the wall of the right ventricle at the point where the bullet was shown in the specimen. The irregularity of the heart, however, gave the impression that the bullet was free in the cavity of the organ and moving about therein. In addition to this case another has been reported, both by Bardenheuer and Podres, observed during life by means of the X-ray. In order to prove that several foreign bodies may exist in the right ventricle of the heart without causing emboli or other disturbances, Riethus experimented on dogs, and found that in one animal, two, and in the other, three, small bullets chained together could be introduced into the heart through the jugular vein with success. Examination of the animals under the X-ray showed their presence beyond all doubt.

LEUCOCYTOSIS AS A POINT OF PROGNOSIS IN APPENDICITIS.

To the Editor of the MEDICAL NEWS:

DEAR SIR: In the article with the above title, published in the MEDICAL NEWS April 5, 1902, the authors, Dr. Henry M. Joy and Dr. Frederick T. Wright, quoted me as having inaugurated the practice of making leucocyte-counts in appendicitis patients at the Calumet and Heckla Hospital, and state that I received the suggestion from Dr. Cabot. The article itself being of such superior excellence and, in my opinion, of such serious importance, I deem it worthy to state in justice to all parties that I received the suggestion from Dr. George Dock, of Ann Arbor, Mich., and it was upon his advice that I inaugurated the practice. Several months later Dr. R. C. Cabot very cordially approved the practice.

E. H. POMEROY, M.D.

Highland Park, Ill.,
Apl. 28, 1902.

SOCIETY PROCEEDINGS.

SOCIETY OF ALUMNI OF BELLEVUE HOSPITAL.

Stated Meeting, Held April 2, 1902.

The President, Alexander Lambert, M.D., in the Chair.

Embolism of the Mesenteric Artery.—Dr. Alexander Lambert reported this case. The patient was a physician, thirty-four years of age, an alcoholic subject, who returned home from a rather prolonged spree and was awakened shortly afterward by nausea, vomiting and abdominal pain. He was called to see a patient and took a hypodermic injection of morphine before going out. During the day the pain continued and enemata were taken without result. At 10 P. M. he was first seen by the speaker and by Dr. W. B. Coley. The countenance presented a very anxions expression, the pulse was 100 and the temperature 98° F. There were no heart murmurs. The abdomen was moderately distended and tympanitic. There was slight rigidity of the recti muscles in the epigastrium and an indefinite

sense of tumefaction. The nausea and vomiting had not occurred during the day. There was no tenderness in the region of the appendix. A high enema of glycerin and warm water brought away some gas and fecal matter. The diagnosis of intestinal obstruction was made at this time. At eight o'clock the next morning his condition was about the same, except that there was a little more prostration. Further attempts to move the bowel during the night had been without result. Up to this time there had been almost no secretion of urine and the little that was passed was bloody. Dr. W. T. Bull was then called in consultation and agreed as to the obscurity of the case, though he thought it to be one of intestinal obstruction. About 8 A. M. on the following day the vomiting became fecal and the patient, though conscious, was extremely prostrated. The diagnosis was still in doubt. Operation was at once undertaken. On making a median incision from the ensiform cartilage to the umbilicus a large amount of bloody fluid poured out. The omentum in the epigastric region was thickened and matted together by recent adhesions and it was studded with small emboli and infarctions. A large fold of the mesentery of the small intestine was found to be greatly thickened in places (one-half to one inch in thickness) and involved a considerable area. A diagnosis of mesenteric thrombosis was then made. As peritonitis had already developed no further operative interference was attempted. The large amount of mesentery involved absolutely contraindicated a radical operation. The patient suffered much from shock after the operation and died quite suddenly about seven hours later. At autopsy, 300 c.c. of thick creamy pus escaped and the entire peritoneum was covered with a thick fibrinous exudate. The entire gut was extended with gas, particularly the cecum. The omentum was studded with small spherical, injected, gangrenous nodules, evidently minute embolisms of the omental vessels. The spleen was displaced upward and was small and soft. The stomach showed a chronic gastritis. The appendix was sharply folded upon itself and had ruptured at some remote time. The mucosa of the colon was congested and there was an abundant secretion of mucus. The mucous membrane of the small intestine was, for the most part, greatly congested. A few emboli and small gangrenous patches were found. The mesentery of the smaller folds of the ileum showed marked congestion and minute emboli of the vessels. The mesenteric vessels were much thickened and showed a markedly atheromatous intima. The pancreas was riddled with fat infiltration. There was extensive infiltration of the interstitial tissue of the pancreas. The liver was enlarged and in places showed fatty degeneration. The gall-bladder was distended with bile. The ducts were open. The suprarenal capsule showed fatty infiltration. The parenchyma of the kidneys was markedly fatty. The heart was large and the muscle showed extensive fatty degeneration. There was a preformed clot in the heart, which was probably the origin of the original emboli. The right pleural cavity was obliterated by subacute adhesions. There were a few recent infarctions in the peripheral portions of the lung. No new light was thrown upon the case by the microscopical examination. Sections through the embolic foci showed extensive blood extravasations. Pronounced atheroma was general. [Dr. Lambert's paper will appear in a subsequent issue of the MEDICAL NEWS.]

Differential Signs.—Dr. William B. Coley said that in watching the case just reported he had been struck with the lack of correspondence between the distention and the prostration. When first seen there was as much distention as is usually present on the second or third day of a general peritonitis, though there was not quite enough tenderness. At the first examination he had noted a peculiar resistance in the epigastrium and this became rather more marked subsequently. What was thought to be a tumor was a mass of omentum bound together by adhesions and filled with these infarcts. This case differed from many of those previously reported by the absence of bloody vomitus and bloody diarrhea. This patient had marked distention, pain, absence of prostration and practically a normal temperature up to the second day. On that day he had been seen twice by Dr. W. T. Bull. The most probable cause of the condition seemed to be intestinal obstruction, but the condition of the patient was considered so good as not to warrant operative interference at the time. When the symptoms became more serious the operation was promptly undertaken; the diagnosis was made chiefly from the enormous thickening of the mesentery. In another case of the kind he would be in favor of an earlier operation. In most cases it is impossible to make a correct diagnosis; operation offers a very slight chance in a very small proportion of the cases.

Dr. John B. Walker said that he had seen one other case, two years ago, but the diagnosis had not been made until after death. It had come on following resection of four feet of the intestine.

Dr. R. T. Morris said he had seen only small localized septic thromboses of the mesentery.

Dr. John F. Erdmann said that during the past winter he had operated upon a case of intestinal obstruction from bands, and in that case there was an embolism of the mesentery. The patient died within a few days after the operation.

Dr. Lambert, in closing, said that there had been a patient at Bellevue Hospital one year ago who had been admitted with a history of intense pain in the abdomen. There was no nausea, vomiting or diarrhea, but there was practically obstipation. The man lived about ten days after the first symptoms; the autopsy showed thrombosis of the portal vein with thrombosis of the superior mesenteric vessels. It was interesting to note that the clot in the heart seemed to be the source of the emboli throughout the body. This naturally raised the question as to whether a clot in the right side of the heart could send small emboli through the lungs and out through the general circulation. Dr. W. H. Welch distinctly states that this is possible and frequently occurs, the lung capillaries being very elastic and the largest in the body. The intense fatty degeneration of the heart was such that the tissue seemed like putty when scraped with the knife. The man had been on an alcoholic debauch, and the fatty condition of the heart might have made the heart slow up so as to give rise to the formation of emboli, and then a return to alcoholic drinking on the following day might have driven the emboli through the system.

General Enteroptosis.—Dr. Robert T. Morris read a paper on this subject. It will appear in a subsequent issue of the MEDICAL NEWS.

Dr. L. W. Hotchkiss remarked that movable kidney occurred in a certain proportion of nulliparous women, and, of course, without any diastasis of the recti muscles.

Dr. Charles E. Quimby said that it was by no means easy to induce many of these women to submit to an abdominal operation. He had seen only one case which had been operated upon, but in that instance the patient had been relieved of a large and varied collection of symptoms, the result of general enteroptosis. There were the gastric and intestinal symptoms, but the kidney had not been dislocated. He did not think that the

condition was the result so much of the corset having pressed the viscera down as it was that the corset had pressed steadily upon the abdominal viscera, and in this way had caused relaxation. The treatment of these patients by the use of massage and electricity applied to all of the abdominal muscles is quite satisfactory, and is greatly assisted by the use of a support of the type of the Teufel pregnancy belt.

Dr. W. B. Coley said that it was impossible for a ventral hernia to result from the operation described by Dr. Morris. Many of these operations result in a recurrence of the herniæ, and so give rise to a condition far worse than the one for which relief was attempted. He would like to know in what class of cases Dr. Morris would recommend this operative treatment.

Dr. Quimby said that the patient he had spoken of had been operated upon for an umbilical hernia, and had been very satisfactorily relieved.

Dr. Morris closed the discussion. He said that in cases of loose kidney occurring in young women without general enteroptosis the dislocation of the kidney is due to the "pumping action" of the corset. Webster's operation does not remove the broad sheath of transversalis fascia and peritoneum, and he thought that if this be not done there is, as Dr. Coley had suggested, a liability to the formation of a troublesome umbilical hernia. With the method which he advised he does not think there is danger of such a hernia occurring after the operation.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held May 1, 1902.

The President, Robert F. Weir, M.D., in the Chair.

This meeting of the Academy was held under the auspices of the Section on Genito-Urinary Diseases. The scientific business of the evening consisted of a discussion of prostatic conditions.

Abscess of the Prostate.—The paper of the evening was read by Dr. Samuel Alexander, who discussed from a number of novel standpoints the etiology, diagnosis, and treatment of suppuration of the prostate. Dr. Alexander said that abscess of the prostate is often neglected until serious complications and sequelæ develop. The principal reason for this neglect is that the anatomy of this region is not known with as much detail as it should be considering its importance, and the student of the pathological anatomy of these parts has rather rare opportunities for its cultivation. With regard to suppuration of the prostate, text-books of genito-urinary diseases usually have very little about the affection and treat it in a conventional manner, evidently not from the personal experience of the writer, but rather as a digest of preceding text-book material.

Etiology of Prostatic Suppuration.—The usual source of infectious material that causes abscess of the prostate is the urethra. The size and character of the abscess depend upon the amount of trauma and the virulence of the infectious material that gains an entrance. Not infrequently urethral injection given with a little more force than usual, or an ordinary posterior urethral injection may cause it. Prostatic abscess occurs especially after acute or chronic urethritis when the affection is overtreated. Abscess of the prostate used to be less frequent than at present, because the treatment of urethritis was less zealous and more judicious. Deep injections or irrigation may easily prove the source of suppuration in the prostate. Overinstrumentation, especially if done with any force, may easily set up prostatic infection. It is not an infrequent complication of urethral stricture; often the infectious material finds its way from the urethra through the excretory ducts to the gland into the glandular substance, and there gives rise to an inflammatory condition.

Follicular Prostatic Abscess.—This condition consists of a collection of pus in one of the follicles of the gland almost directly in connection with the urethra. As a rule, such abscesses open of themselves without any difficulty into the urethra and constitute a pathological condition only a little worse than posterior urethritis. The collection of pus is due to the obstruction of a duct or to the dilatation of a gland from the accumulation of purulent material near its orifice. When the purulent collection increases in size, edema of the prostate occurs. Under these circumstances if anything happens to increase the active congestion of the gland, as, for instance, sexual excitement or posterior urethritis, there is a notable increase in the edema of the prostatic structures. This leads to a swelling of the prostate very noticeable through the rectum and may even cause retention of urine.

Congestion of Prostate.—When the circulation of the prostate is impeded there is always pressure produced upon the prostatic plexus of veins. The gland is surrounded by a capsule which supplies the counter-pressure, and when swelling takes place serves to shut up the veins before the circulation through the arteries is much interfered with. This increases the passive congestion of the prostate and may bring on retention of urine. The capsule of the prostate contains, moreover, certain muscle fibers which easily compress the prostatic veins, and this plexus is lacking in valves. This mechanical explanation for the occurrence of retention of urine has so far not been properly realized or, so far as Dr. Alexander knows, ever been described before.

Frequency of Urination.—Frequency of urination brings the muscle fibers in the prostatic capsule into active contraction. This has a further effect upon the prostatic veins and adds to the congestion, and so may induce complete retention of urine. In proof that this theory is correct is the fact that when the frequency of urination is relieved there is at once a lessening of the swelling of the prostate, and before long the patient is able to pass his urine voluntarily.

Simulation of Prostatic Abscess.—Dr. Alexander demonstrated a picture of a dilated posterior urethra from a patient in whom there had been a mistake in diagnosis as to the existence of a prostatic abscess. A stricture of the urethra existed at the bulbomembranous junction, behind which the urine had formed a dilatation of the urethra, including also the prostatic portion, so that the prostate seemed to be enlarged, and at times a sensation almost of fluctuation could be discovered. An infectious condition had developed as the result of the stricture, and as the patient suffered from fever diagnosis of abscess seemed justified. Such conditions are rare, but the treatment that Dr. Alexander suggests for prostatic abscess, namely, the opening of the urethra through a perineal incision and the evacuation of the abscess through this canal, would prove completely effective for the cure of this condition.

Position of Prostatic Abscess.—Collections of pus in the prostate occur most commonly in the lateral lobes of the gland below or behind the urethra and in front of the *veru montanum*. From this position an abscess can very well be opened through the urethra. When so opened drainage is more natural and more complete, and there is little liability of the spread of infectious material into the tissues.

Prostatic Capsule and Gravitation of Pus.—The prostatic capsule has never been properly studied with the idea of learning from it what are the natural directions in which pus may be directed from the prostate

into surrounding tissues. The prostatic capsule is composed mainly of the inner fascia of the levator ani muscle which joins the middle layer of the perineal aponeurosis to cover most of the gland. The capsule is completed by the perineal fascia. This anatomical arrangement of the capsule allows pus that finds its way through the capsule to gravitate into the ischiorectal region or into the perineum; a collection of pus by pressure on the rectum may ulcerate a way for itself into this organ. In cases of ischiorectal abscesses, periprostatic suppuration should always be suspected, and until this can be eliminated other sources of the pus, and especially the conventional explanation that it is due to infectious material which has found its way through the rectal walls, should not be accepted.

Diagnosis of Prostatic Abscess.—The first symptom of prostatic abscess is usually set down in the text-books as the existence of fluctuation on rectal examination. Needless to say there has been pus in the prostate for a good while before this symptom can be detected. As a matter of fact, the condition called prostatic congestion is in most cases incipient abscess formation. Fluctuation should not be waited for, but if possible an incision should be made in the prostate before this symptom can be demonstrated. Careful bimanual examination will usually reveal the existence in one of the lateral lobes of a distinct swelling accompanied by tenderness. These symptoms in a patient suffering with severe pain in the prostatic region, with retention of urine and a febrile condition indicating the existence of an infectious focus, is enough to justify the opening of the posterior urethra through the perineum to search for the abscess.

Important Preliminary Symptoms.—A very significant symptom of prostatic abscess is the occurrence of a large amount of albumin in the urine. When this can not be accounted for either on the score of the quantity of blood present, or pus from some other source, it is almost pathognomonic of nephritis and when present aids materially in determining operation. The reason for the presence of this albuminuria seems to be that congestion of the prostate squeezes serum from the blood which finds its way into the urethra and thence into the bladder. The other important symptom is the difference in the size of the lateral lobes of the prostate that can be felt on bimanual examination, as already pointed out.

Technic of Operation.—When pus exists in the prostate it must be removed, and if the spontaneous evacuation which sometimes takes place be incomplete, an operation will be required for thorough drainage. If pus once finds its way out of the capsule into the periprostatic tissues the case is apt to become extremely complicated and takes a long time to heal. The old prerectal incision undoubtedly enables the surgeon to reach the pus in the prostate without much difficulty. The same thing might be said for the incision through the rectum itself, but no good surgeon considers this route advisable. It has been recognized that the prerectal incision has many disadvantages—the wound is too extensive and, with the rectum just below and the urethra just above, it invites infection. While it opens up the capsule of the prostate, this incision does not prevent the pus finding its way into the urethra. Dr. Alexander considers, then, that Nature's method of opening into the urethra should be followed. Perineal section is made and the prostatic urethra is dilated with the finger. By touch it can be recognized on which side the pus exists and the collection can usually be opened with the finger. A rubber-tube is inserted in the bladder and the collected pus encouraged to drain thoroughly. One of the complications of this method of operating is that epididymitis sometimes occurs. As a rule, however, the patient is out of bed on the fifth or sixth day and feels perfectly well, and all his urine comes through the urethra after about two weeks.

Individualisation of Treatment for Enlarged Prostate.—Dr. Bransford Lewis of St. Louis said that it is the custom for physicians to ask what operation is considered most advisable for enlarged prostate. The consideration that underlies this question is entirely fallacious, presupposing that all cases of enlarged prostate can be treated by similar methods. As a matter of fact, each has individual features and requires careful study in order to determine the most helpful method. Dr. Lewis presented a model of a case whose history was as follows: The patient had lived a catheter-life for several years. A surgeon removed the prostate through the perineum, yet the patient received no relief from his urinary symptoms and had to continue the use of a catheter. Dr. Lewis then used the Bottini method of treatment and after it the patient was able to urinate voluntarily. After urination, however, four ounces of residual urine remained. The patient was very thankful for the relief of symptoms.

Causes of Difficulty of Urination.—A cystoscopic examination in this case showed the existence of a collarette of prostatic tissue around the entrance to the urethra at the neck of the bladder, which prevented proper emptying of the viscus. It was then a case entirely unsuitable for prostatectomy, and the Bottini operation had served only to make an anterior notch in the collarette, partially relieving the symptoms, but not permitting complete bladder evacuation. A suprapubic operation was done and the size of the collarette was reduced by the direct application of the Paquelin cautery. The patient made a prompt and satisfactory recovery. He has but half an ounce of residual urine. He urinates four times a day, a full stream, and he is able to urinate freely before a class or a medical society.

The Median Lobe, Ball-and-Socket Valve.—Dr. Lewis then presented the model of a case in which the obstruction to urination was due, not to the enlargement of the prostate itself, but to the fact that an enlargement of the median lobe caused an intermittent blocking of the urethra. Such a case is not suitable for the Bottini operation because the burning of the median lobe does not reduce the obstruction. In this case the middle lobe must be removed by a suprapubic operation. At times the obstruction to urination is due to the existence of a prostatic bar. This must be removed through the perineum. At times a pedunculated tumor causes the obstruction to urination; a catheter slips in very easily and the urethra seems to be perfectly normal. When the bladder becomes distended with urine, however, the tumor completely blocks the entrance to the urethra. The only treatment for such a condition is the suprapubic operation with the removal of the pedunculated tumor.

Frequency of Abscess of the Prostate.—Dr. James Bell of Montreal, in discussing Dr. Alexander's paper, said that he has seen many follicular abscesses of the prostate, especially in cases of posterior urethritis or in old catheter patients, but as a rule the collections of pus had evacuated spontaneously through the urethra. Dr. Alexander's description of the anatomy of the capsule of the prostate seemed to Dr. Bell to make clear a recent complicated case seen in hospital practice. The patient, a young man, was treated overzealously for gonorrhea, the result of which was a retention of urine. The patient became very much emaciated and suffered from febrile temperature which showed the existence of an infectious focus. After a month the abscess opened into the perineum and a sinus appeared over the tuberosity of the ischium; the whole perineum became sensitive. After a time the abscess opened into

the rectum; then a perineal section was done and a freer vent given to the pus. Altogether, however, the patient was some eight months under treatment. The case did not come under Dr. Bell's care at a time sufficiently early to enable him to anticipate its complications. Dr. Alexander's case seems to point out clearly how much can be done by early intervention.

Prostatic Congestion and Follicular Abscess.—Dr. Paul Thorndyke of Boston said that follicular abscess of the prostate is undoubtedly often diagnosed as prostatic congestion. The most serious consideration with regard to prostatic abscess is that surgeons usually see it too late. As a diagnostic rule, frequency of urination with strangury, if not easily palliated, should be considered as significant of abscess. Acute swelling of the prostate should not be called prostatic congestion, but should always raise the suspicion of a suppurative condition. The prerectal incision of a prostatic abscess is not a difficult matter because of the ease with which structures can be recognized. Better results, however, can be obtained by Alexander's operation through the perineum and the prostatic urethra.

Forcing and Retention of Urine.—Dr. Thorndyke said that while frequency of urination often led to more serious disturbances of the urinary apparatus, it must not be forgotten that relief of the forcing by tying a catheter in the bladder may save the patient from subsequent complete retention of urine. Dr. Alexander's explanation of the constricting effect of forcing and the resultant increase of passive congestion, with consequent increase of difficulty of urination, shows the vicious circle that may lead to complete blocking of the posterior urethra. In many of these cases retention of urine can be avoided by relieving the bladder through a catheter *à demeure*.

Albuminous Urine and Prostatic Suppuration.—Dr. Tilden Brown said that the occurrence of albuminous urine is undoubtedly a very significant symptom of prostatic suppuration. Dr. Alexander's explanation of its occurrence, *i. e.*, that it is due to prostatic congestion and consequent leakage of serum into the urethra where it is mingled with the urine, is very plausible. All periprostatitis, Dr. Brown thinks, is not necessarily due to conditions within the prostate. He has seen membranous pericellulitis occur in the periprostatic tissues that was undoubtedly due to some other cause. Ischiorectal abscess is frequently due to causes other than spread of suppurative conditions from the prostate. Dr. Alexander's explanation of the anatomy of the prostatic region, however, is almost sure to prove of great help to genito-urinary surgeons in their consideration of these cases.

Diagnosis of Prostatic Suppuration.—Dr. George E. Brewer said that prostatic suppuration frequently fails to give a classical clinical picture. At times there is no history of fever in the case. Sometimes the initial fever has subsided and the vesical irritability has diminished, yet the prostatic suppuration remains. Recognition of the existence of pus is then a difficult matter. Leucocytosis is a significant symptom and its presence in suspicious cases may help the surgeon to decide. Ischiorectal suppuration is not infrequently due to prostatic conditions. Dr. Brewer saw a case recently in which there was no suspicion of a prostatic etiology for the abscess collection in the ischiorectal region. A second operation was necessary, however, and during this a small sinus leading to the prostate was found. Not infrequently multiple abscesses occur in the prostate, in which case the diagnosis symptoms suggested by Dr. Alexander would fail. Both sides of the prostate may be enlarged. While the operation suggested by Dr. Alexander is undoubtedly of service if the case of prostatic suppuration come for treatment early, the old prerectal operation will still probably give more satisfaction in many of the complicated cases.

Prostatic Suppuration Infrequent.—Dr. B. Farquehar Curtis said that abscess of the prostate is not a common affection. He was for three years in charge of a large genito-urinary clinic in which many cases of gonorrhea came for complete treatment, and yet in that time he did not see a single case of prostatic abscess. It is true that this was at a period when gonorrhea was treated by mild injections of the anterior urethra rather than by deep irrigations or meddlesome treatment of the posterior urethra. Perhaps prostatic abscess occurs more frequently at present. Dr. Curtis believes that Dittel's old operation is still the most favorable one for periprostatic suppuration. When no secondary infection has taken place and the pus has not gotten beyond the limits of the prostate, the method suggested by Dr. Alexander is the natural and effective route for the evacuation of the pus. The suggestion is certainly novel and the method is simple. Dr. Alexander deserves great credit for his ingenuity.

Etiology of Prostatic Abscess.—Dr. John Van der Poel said that prostatic suppuration is most frequently due to the gonococcus. This is prone to affect the follicles of the gland rather than the substance of the prostate. As the result of the lowered resistive vitality consequent upon chronic gonorrhea of the posterior urethra, secondary infection of the prostate is liable to take place. The microbes most frequently concerned are staphylococci, streptococci, and the bacillus coli communis. Recently an anaerobic bacillus has been described as occurring in very acute prostatic conditions; this form of prostatic abscess, however, is specific and is apt to be followed by gangrene and the production of very fetid pus. Pseudo-abscess of the prostate, due to infection of the follicles of the gland from the urethra, is apt to be multiple. This condition does not as a rule give many symptoms, nor does it require operative interference. True prostatic abscess should be opened at the earliest possible moment in order to avoid complications, and Dr. Alexander's suggestion as to early diagnosis and treatment will undoubtedly prove to be of the greatest value in this matter.

Bimanual Examination.—In closing the discussion, Dr. Alexander said that bimanual examination was of very great service for the early detection of prostatic abscess. Inequality in the size of the lateral lobes of the prostate can be rather easily detected with one finger in the rectum and another pressing firmly just over the pubis. When the lobes of the prostate are distinctly unequal in size, the presence of some acute prostatic condition may be suspected. If there be other symptoms of pus in this region, as, for instance, fever, uneasiness, frequency of urination and a tendency to force at urination, this finding at a bimanual examination should decide the surgeon to make a perineal incision and relieve the abscess. If at the same time the urine contain more albumin than can be referred to some known bladder or kidney condition, one can be almost certain that an abscess of the prostate exists.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, Held May 6, 1902.

The President, Joseph Collins, M.D., in the Chair.

A Case of Primary Myopathy.—Dr. J. Ramsay Hunt presented a girl of sixteen having a negative family history. One year and a half ago there was noticed a difficulty in pronouncing words and also a nasal twang. A few months later there was some regurgitation through the nose, and it was noted that she

did not close the eyes completely during sleep. Examination showed marked deficiency of the muscles of the face on voluntary and emotional innervation. The orbicularis oris and the orbicularis palpebrarum and the zygomatici were chiefly affected. The palatal muscles were motionless. The muscles of the upper arm and shoulder were small. The tendon reflexes were active, but there was no evidence of involvement of the pyramidal tract. The speech mechanism was easily fatigued, articulation becoming less distinct on prolonged effort.

Tumor of the Brain.—Dr. Max Mailhouse of New Haven presented a brain taken from a woman who had been admitted to the New Haven Hospital on March 13th with a history of severe headaches for a year and a half and considerable mental disturbance. Speech was incoherent and muttering. There were exaggerated knee-jerks; also ankle-clonus and increased plantar reflexes. The optic nerves were atrophied and she could only distinguish light. Twitching of the muscles of the eyebrows was observed the first night, and she was so restless as to require restraint. During the six weeks she was in the hospital there were two or three attacks of vomiting. She complained constantly of headache and thirst. On April 14th, when examined by Dr. Mailhouse, there was slight strabismus from weakness of the left internal rectus; the knee-jerks were exaggerated and there was ankle-clonus on both sides. There was loss of vision. Mentally she was tolerably clear. She became more restless and talkative, and the pulse more rapid and irregular; two days before death she became unconscious and died in this condition. The autopsy was made on the day after death. It revealed a tumor in the interpeduncular space; examination of the tumor made it appear that the growth either originated in or soon involved the optic chiasm. The tumor pressed upon the left third nerve and also upon the facial tracts above the pons, causing the spasmodic twitchings of the facial muscles. No report of the microscopical examination had yet been received.

Paralysis of the Serratus Magnus.—Drs. Joseph Collins and I. Abrahamson presented a woman of twenty-eight who had been in fair health up to last November. At this time she had had an attack of suppurative tonsillitis, which was followed by suppuration of the glands at the posterior border of the sternomastoid muscle. These were incised and much pus evacuated. About seven weeks afterward the shoulder was noticed to project upward and it was the seat of a throbbing pain. When seen, the left scapular presented a wing-like appearance and what appeared to be an isolated paralysis of the serratus magnus muscle. Some of the fibers of the supraspinatus and of the infraspinatus showed slight reaction to the faradic current and some slight atrophy. There was a large linear postoperative scar along the upper posterior border of the sternomastoid muscle. There was some enlargement of the glands on the left side of the neck. The diagnosis was based upon the position of the scapula while at rest, on the peculiar limitation of movement when the arm was brought forward at a right-angle, on the absence of sensory disturbances and of symptoms pointing to spinal origin and on the presence of degeneration reaction. The lesion was evidently a post-infectious neuritis involving the posterior thoracic nerve, probably that portion in the body of the scalenus. The chief features of interest were its peculiar etiology; its occurrence in a female; the absence of trauma and of any of the ordinary causes; its late recognition; the change in the position of the scapula when at rest; the presence of scoliosis, as had been observed by Stromeyer in a few cases.

Dr. W. M. Leszynsky said that most of these cases of serratus magnus paralysis were due to pressure or to progressive dystrophy, but he had shown a case to this society in which it had followed an infection—pneumonia.

Atypical Syringomyelia.—Dr. Joseph Collins showed a case which he had diagnosticated as syringomyelia. The patient was a stationary engineer, fifty-seven years old, who had lived a temperate and healthy life, not exposed to syphilitic or inorganic poisons. Three years ago he noticed that he tripped easily, on going down stairs, and that he was getting clumsy in the use of his feet. About the same time he remarked that the little and ring fingers of both hands were becoming stiff, as he termed it. He found difficulty in using these fingers dexterously and in appreciating objects coming in contact with them. Soon these fingers became deformed, a flexor deformity of the second and third phalanges, which was gradually progressive and which was dependent upon atrophy of the hypothenar muscles and the last interossei. At the same time the loss of sensibility in the ulnar distribution progressed. About a year ago a slight sore developed on the ball of the right foot, now a typical perforating ulcer. The patient presented the following: (1) Atrophy of the hypothenar and the last interossei muscles and consequent deformity; (2) glossiness of the skin of the hands; (3) analgesia and thermoanesthesia, and partial tactile anesthesia in the little fingers and the ulnar halves of the ring finger; (4) thickening of the ulnar nerves, rendering them palpable; (5) increase of mechanical irritability of the muscles of the upper extremities; (6) typical perforating ulcer in the ball of the right foot; (7) analgesia and thermoanesthesia of the toes and the outer half of both feet; (8) slight exaggeration of the tendon jerks in the lower extremity; (9) no deformity of the spine and no symptoms referable to the cranial nerves; (10) no disturbance of the sphincters or of the sexual function. Dr. Collins said that the case was not a typical one of syringomyelia, but that diagnosis seemed more likely than any other. The condition was a progressive one.

A Case of Raynaud's Disease.—Dr. B. Onuf presented a young man with Raynaud's disease that had existed for about two years. Sensation was normal during the attacks. There was a history of rheumatism of the joints. He was a sailmaker by occupation and in his work the tool used caused pressure on the right palm. The urine showed an abundant deposit of urates. The condition had not been improved by any method of treatment so far employed.

Mental Dissociation in Depressive Delusional States.—Dr. Ira Van Giesen was the author of this paper, which, he said, represented some of the work formerly done in the New York State Pathological Institute. The subject of the report was a Russian of twenty-six having a good family history. In February, 1900, he had begun to suffer from insomnia, headaches and loss of appetite, and had become despondent. The general health had rapidly deteriorated and a local physician, on examining him, stated that his trouble was largely indigestion, and that there were "lumps" in the bowel. This was the foundation of a delusion which the patient fondly cherished. There was also a belief that there were worms in the intestine which worked upon the lumps and broke them up into minor lumps, and sent the latter throughout the body. The patient believed that he was rescued from his dire distress by three agencies, *viz.*, the spleen, the soul and the veins, the soul being the scavenger and the spleen the director. When the attention of the soul was distracted this work was not well done. As might be expected the patient was extremely depressed and his physical condition suffered. He could only speak read-

ily on the all-pervading subject of his delusion. The loss of attention was marked except as regards the systematized delusion. No gross motor disturbances were present. The patient reacted slowly to external stimuli. There were no sensory disturbances, no hallucinations, and no tendency to self-destruction. He could fully realize his environment and his relations to space and time. As soon as he passed into hypnotic trance a metamorphosis almost instantly occurred, the patient passing from intense depression to a state of great exaltation. Despite this the focal delusion persisted and appeared to be far better organized. This clearly pointed to the fact that either the state of depression was one of secondary formation or the delusion, being secondary in its origin, had gained sufficient strength to stand by itself, even after the emotional basis had been withdrawn. The latter alternative seemed to be the more probable. In his trance he could vividly remember all that had taken place in his waking life, and he could recall fairly well what happened while in the trance. Later on the patient at one time passed into a deeper trance and then passed from a state of inexpressible delight to one of grave composure. In the last trance personality he could remember all the experiences of the other trance personality and of the waking personality. The relation of these three personalities were described diagrammatically by three concentric rings. The central one was the melancholic personality, and outside of this were successively the rings representing the first and second trance personalities. Of the three personalities, the waking was pathological. The first trance personality was exalted, while the second trance personality approached closely to the patient's healthy condition. The course of these personalities resembled quite closely what was observed in circular insanity. These alternating personalities were, however, ephemeral. Soon the first personality shrunk and finally disappeared altogether. In the course of time the first trance personality disappeared, and never returned. The mood of the second trance personality then lost some of its former seriousness. The tendency was for the intermediate personalities to disappear and the last one to become the dominant one. The process of evolution of species in general was one great illustration of the process just described. Throughout all of these transformations the central delusion remained unshaken. The great assimilating power of this delusion was wonderful. Various suggestions were given to this patient; although they were designed to break up the nucleus of the delusion, they were turned about by the patient and fed into this systematized delusion. It was necessary to follow the patient in his delusion and play into the hands of the latter in order to make the suggestion take root. Direct suggestion during deep hypnosis was the usual method of breaking such a strong delusion, but the objection to this method was that it was apt to be only temporary in its effect. The method of emotional substitution was especially valuable in a case of this kind. Some unimportant sensory changes were first attempted, as for example, the abolition of the unpleasant thermal changes in the "lumps," but they were only partially successful. The effort was then made to fuse the different personalities. During hypnosis dreams were suggested to the patient, with the object of effecting changes in the central delusion. For example, in one of these dreams his father told him that these lumps would go away. These dreams impressed him deeply though slowly. When the good dreams had become dominant the spleen and soul began to drop out, and then the galvanic current was substituted for the soul with great benefit. Small spots were next substituted for the large lumps. The spots were gradually confined to certain definite areas instead of being vaguely disseminated. The patient's melancholia finally disappeared completely and he has now resumed his original vocation. The case was regarded as a triumph for this mode of treatment and as a type of many other cases now in the State Hospitals for the Insane.

Dr. Mary Putnam Jacobi asked whether the transition of the two personalities had occurred spontaneously or had been brought about by some special maneuver.

Dr. Henry Rafel asked if there was any other case on record in which hypochondriasis had been cured in this manner by hypnosis.

Dr. Van Giesen said that the paper had been prepared by his former associates at the State Pathological Institute. The transition of the personalities had occurred spontaneously. He was not sufficiently familiar with the literature to answer positively the second question. If hypnosis had been used in the ordinary way the result would have been only transient benefit; a permanent cure had been effected by a thorough understanding of the whole mechanism of hypnosis. This patient had been cured eighteen months ago.

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, Held May 12, 1902.

The President, Andrew H. Smith, M.D., in the Chair.

Etiology, Pathology and Treatment of Joint Diseases.—Dr. A. M. Phelps read the paper of the evening. He expressed the opinion that joint diseases are due primarily to trauma and secondarily to infection, whether tuberculous, syphilitic, or resulting from the invasion of such morbific agents as the streptococcus, gonococcus and pneumococcus. He considered struma a state, not a disease, and generally inherited. If a joint has received an injury and inflammatory action has been set up the bone at the seat of the injury is also infected.

A question of great interest is as to the possibility of rupture of the internal lateral ligament of the knee-joint in injuries to the joint. It was claimed by most authorities that such rupture not infrequently takes place, but Dr. Phelps has made a series of experiments on the cadaver which showed that, even although sufficient violence was employed to fracture the bone, it was impossible to rupture the internal lateral ligament. He presented a number of specimens which showed that such fractures had been caused without injury to the ligament. There is often a dual inoculation, such as the tuberculous and the streptococcal. The disease grows as a mold, and the bone perishes from malnutrition, the blood-supply being cut off.

Mechanical Treatment.—Mechanical treatment, Dr. Phelps believed, should be commenced just at soon as the diagnosis of joint inflammation or disease has been made. If there be an acute attack, with great pain, it is advisable that the patient should be treated in bed for a few days until relief is obtained; but as soon as the pain has subsided and the deformity has been overcome, mechanical support should be applied. The object of the treatment is to restrict every motion of the joint and to effect extension in proper lines for the relief of intra-articular pressure. This pressure, which is produced by muscular spasm, is likely to result in destruction of the entire joint, necessitating either amputation or excision. The manner of application of fixation and extension is determined by a study of the mechanics of the various joints and of the action of the muscles involved. As they sustain the weight of the body, the joints of the lower extremeties re-

quire very much more protection than do those of the upper extremities. Braces for lower extremity joints should prevent the patient from stepping upon the foot, as by so doing the articular surfaces would be driven together and more inflammatory action and disease result. It is therefore advisable that any form of apparatus designed for the lower extremities, especially in the case of children, should extend at least 2½ inches below the bottom of the foot, and should have a point of impact against the tuberosity of the ischium. By far the best supporter is one that has for is upper point of impact a steel ring properly padded. In the case of an adult with intelligence enough not to step upon the diseased limb, other appliances may be used.

Hip-joint Disease.—In hip-joint disease two lines of extension are absolutely necessary for the relief of intra-articular pressure. One of these must correspond with the axis of the neck of the femur because the glutei group and adductor muscles which are affected by spasm, act upon a line with this axis. The other must correspond with the axis of the shaft, because the iliacus internus and psoas muscles which are also in a state of spasm, act on a line with the latter axis. All patients with deformity should be put to bed, with extension in the line of deformity and at right angles to that line. In fact, the treatment of any case of joint-disease should be begun by overcoming the deformity, as a straight brace cannot be successfully applied to the deformed limb. There is hardly any deformity in joint disease which cannot be best overcome by extension in bed and by forcible means under anesthesia. After the deformity has been overcome, Dr. Phelps uses a lateral traction or fixation brace, devised by himself, which is perfectly straight and which, when properly applied, will prevent future deformity. The theory that longitudinal traction relieves intra-articular pressure is erroneous. The glutei and adductor groups of muscles are pulled upon, and, by the direction of their origin, any exertion must necessarily force the head of the bone into the socket. Cases treated with this splint seldom recover with ankylosis. It is very important to recognize the fact that no case of hip-joint disease recovers inside of two years, and 75 per cent. of the cases brought to Dr. Phelps have abscess as the result of premature removal of the brace. After the patient has worn the brace for eighteen months or two years and the muscular spasm and the disease have subsided, a walking brace should be applied, which protects the child from injuring the limb if he falls. Joints are frequently seen with all the symptoms of inflammation, which recover within a few months; but this is simply a transitory condition due to normal inflammation, and if protected such joints will recover. If infection take place, however, disease occurs and the abscess results, tuberculous, purulent, gonorrheal, or pneumococcal, and frequently surgical intervention is necessary.

Other Joint Diseases.—In knee-joint disease, particularly in children, he regarded Thomas' as the best brace. By adding straps, extension can be made with it; here, as well as in hip-joint disease, extension must be made in two lines in order to counteract muscular spasm. Sayre taught many years ago that two lines of extension should be applied, one longitudinally and the other at right angles, at the head of the tibia. The only objection to Sayre's knee-brace is that, unless great care be used in adjusting it, it is apt to interfere somewhat with the circulation of the limb. In ankle-joint disease or inflammation Dr. Phelps' method is first to envelop the foot and leg in plaster of Paris; while the plaster is setting, extension is applied and the cast carefully molded to the part. Thomas' brace is then applied and the child is allowed to walk upon the brace with a high shoe. In the adult, however, he prefers to use a brace, which he devised a number of years ago, which absolutely fixes the joint and extends the foot. Plaster of Paris is undoubtedly the best fixation appliance for mediotarsal joint disease. In diseases of the shoulder-joint he employs a pad in the axilla and passes adhesive straps around the arms and body, thus throwing the head of the humerus away from the glenoid cavity (into which the muscles tend to force it) and absolutely fixing it. Plaster of Paris is the best dressing in elbow-joint and wrist-joint disease, except when extreme muscular spasm is present. It is very difficult to make extension with plaster of Paris at the wrist, and for this reason Dr. Phelps employs a fixation brace. In disease of the spine the same law applies as in the treatment of joint disease of the lower extremities, and he has found no apparatus as efficient as the plaster of Paris and aluminum corset, made while the patient is in a position of suspension. The aluminum corset is light, durable and cheaper than any other when the patient requires treatment for two or three years, as is usual in Pott's disease. He exhibited a padded board, shaped to correspond with the patient's figure, which he said was a very satisfactory cheap substitute for Sayre's wire cuirass for children of three years and under, in whom, on account of the narrowness of the hips the plaster of Paris jacket was inapplicable.

Operative Treatment.—The general position taken by Dr. Phelps is that mechanical treatment should always be employed from the beginning to the end of any joint disease, and that every abscess should be attacked as soon as a diagnosis is made. Every joint condition attended with an abscess should be immediately operated upon for two reasons: First, for exploring the joint. The largest and most painful abscess is not infrequently the most benign and attended with the least amount of bone disease, while small abscesses are often found to have originated from foci of disease in the bone requiring immediate operation in order to avoid excision. In the second place (and this applies particularly to hip-joint disease), the head of the bone is very frequently found separated from the neck, and only when the surgeon has put his finger into the joint can he determine the advisability of doing a complete excision, if requisite. Any abscess, whatever its nature, should therefore be immediately opened and cleansed out. The curette should be freely used when this is practicable, but if the disease be so extensive that it cannot be removed by the scoop, the tissues which have been destroyed by disease should be removed. The joint should then be thoroughly flushed out with a 5-per-cent. solution of carbolic acid or a 2-per-cent. solution of bichloride; after which it should be wiped dry and injected with pure carbolic acid, the latter being allowed to remain from one to two and a half minutes. Finally, the joint should be washed out with 2-per-cent. carbolic acid, and, in deep joints particularly, glass speculum drainage should be used. Indeed, in all cases of bone operation in deep structures this form of drainage should be employed instead of packing the wound. In abscess of the wrist and in hip-joint disease particularly, operation at the earliest possible moment was urged. When the hip-joint is opened for exploration, and the epiphyseal lines of the acetabulum are found to be infected, excision should be practised whether the neck and head of the femur be diseased or not, for the reason that free drainage is prevented by the condition. Such cases invariably go on to the formation of other abscesses, and amputation or excision must eventually be performed. When an abscess has discharged into Scarpa's triangle, it should

never be opened at that point, but the incision should be made along the anterior border of the femur, and the abscess washed out with pure carbolic acid. In extensive disease of the bones of the knee in children under fourteen years of age, nothing but curetting should ever be performed, and this may be repeated from time to time. The capsule of the joint should be freely incised, and a flat piece of gauze drawn through from side to side, after washing out and cleansing. In tarsal disease with suppuration in children, an abscess will frequently be found involving one of the tarsal bones. The adjacent bones should also be examined in order to discover whether they have become infected. Dr. Phelps said that he had frequently removed every bone of the tarsus, including the astragalus, leaving the periosteum of each bone and thoroughly cleansing out with carbolic acid and alcohol. Perfect reproduction of the bones has followed in a large proportion of cases (from 60 to 70 per cent).

Single Joint Disease Never Due to Rheumatism.—In conclusion, he expressed his conviction that there is no such thing as single rheumatic joint disease. If joint disease be due to rheumatism, more than one joint will become affected. Every single joint disease is either purulent, tuberculous, gonorrheal, pneumococcal, or is due to some central nerve lesion. If, after one joint has become infected, others are subsequently attacked, it is presumptive evidence that such joints are secondarily infected from the original foci of disease.

The Importance of an Early Recognition of Disease.—Dr. Reginald H. Sayre thought the most important thing was early recognition of the conditions present, so that the affected joint could be provided with protection and rest at the earliest possible moment. It is the failure to detect the first indications of joint disease which is responsible for most of the serious cases with which the orthopedic surgeon has to deal. Patients were often brought to him who, it was stated, were *threatened with* Pott's disease or hip-joint disease, when in reality the pathological process had already been going on for months. In this way much valuable time is lost. It is not infrequently the case that the first positive discovery of the disease is made by the mother of the patient, who, for instance, notices that her child had a knuckle on its spine. Yet long before symptoms existed which, if properly interpreted, would have led to an early diagnosis and successful treatment in the initial stage. As long as there is a simple tuberculous infection to be dealt with, the patient is safe; but when a mixed infection has occurred there is always danger of a fatal issue. A good deal depends on the location, and unless, therefore, one feels sure of getting a clean result, it is preferable to leave a tuberculous abscess alone. The points made by Dr. Phelps in regard to the intelligence of patients and the frequent necessity of meeting lack of intelligence on the part of patients and of the parents of children under treatment, he thought well taken. It is often necessary, by means of mechanical contrivances, to protect patients against themselves, because they fail to grasp the principles which the apparatus prescribed is designed to carry out. If a number of joints be implicated, his experience has led him to suspect the existence of syphilitic disease in connection with the tuberculous, especially in children under two years of age. In the majority of simple tuberculous cases only a single joint is affected. If syphilitic infection be present, there is a strong probability of a more rapid and better recovery than otherwise.

Etiology.—Dr. Joseph A. Blake said that, while it is certainly possible for an infected gland to discharge directly into the veins, he did not think this is the usual method of infection. In all his experience with tuberculous glands he has never observed such an occurrence. In regard to the drainage of abscesses, he agreed most heartily with Dr. Phelps as to the deleterious effects of gauze packing. After appendicitis operations, when this was employed, he has often seen the temperature jump up, instead of going down. His own practice was to use rubber. In regard to the impossibility of rupturing the internal lateral ligament, it seemed to him that Dr. Phelps had taken pretty strong ground. It is very common to say that rupture of the ligament has occurred. In injuries of the knee it might not be absolutely torn through, but he believed that its fibers were sometimes divulsed. He thinks that a partial rupture of the ligament is possible.

CHICAGO ACADEMY OF MEDICINE.

Stated Meeting, Held March 14, 1902.

The President, Daniel R. Brower, M.D., in the Chair.

Degenerative Bulbar Paralysis.—Dr. Alfred C. Cotton reported a case of this disease. The patient, Kitty M., aged eleven years, first came to his clinic January 17, 1902. Mother living and well. Father died of pneumonia. Her paternal grandmother developed some form of paralysis after child-birth. Her paternal grandfather was paralyzed late in life and had some disturbance of speech which disappeared before death. Birth and early history negative; diseases of infancy pneumonia and diphtheria, which latter disease she had twice. Early in September her mother detected slight difficulty in swallowing and some defect in speech. About the middle of September she was sent home from school with instructions to have her eyes tested, and she was given glasses for astigmatism. Drooling and speech defects led to a consultation with a throat specialist, who advised the removal of post-nasal adenoids. She had occasional fits of obstinacy and cried frequently; *i.e.*, she was emotional, but showed no evidence of impaired mentality. Speech and deglutition became increasingly difficult, so that the hand was occasionally employed to retain food in the mouth.

The girl is of average size for her age, but somewhat pale and poorly nourished. The expression of the face, fallen lip and drooling mouth, first arrest attention. She answers questions indistinctly and laboriously. The speech defect shows inability to pronounce labials and dento-linguals. She cannot wrinkle the forehead, elevate the eyebrows, close the eyes completely, purse the lips, or smile. The tongue cannot be protruded beyond the teeth, nor raised to the roof of the mouth. It is thickly coated, plainly shriveled, and lying placidly in the floor of the mouth, with occasional flickering tremors. The uvula and palate show some anesthesia. The voice is monotonous, and of nasal quality. The mouth is full of saliva which pours over the pendulous lip. The child masticates food slowly and swallows with marked difficulty, at times choking and coughing. Fluids do not regurgitate through the nose, nor is there any history of this symptom. The respiration is shallow, and under excitement or exertion becomes slightly snoring. She also snores while asleep. Examination of the ocular fundus and ear gave negative results. The pupillary reflex is normal. The range of ocular movements is somewhat restricted toward the right. Slight horizontal nystagmus is at times noticeable. She cannot close the eyes completely, prolonged effort causing parallel deflection upward and to the left. Eyes are constantly suffused, and there is conjunctival anesthesia. The general muscular system shows but little wasting. Patellar reflexes normal and coördination good. Electrical response to both galvanism and faradism normal, with the exception of the facial muscles,

which show the reaction of degeneration. A.O.C.= 2.5 M.A. C.C.C. = 4.5 M.A. A.C.C. = 4.5 to 5 M.A. There is no response to faradism (the strongest current) in facial muscles. No anesthetic areas, either thermal or tactile, were found except of palate and conjunctiva. No tremors were present except occasional fibrillar twitchings of tongue and facial muscles. Taste was not affected. There is a systolic mitral murmur. The child has been under observation for seven weeks, and during that time the highest and lowest temperatures have been 97.4 and 100.4° F., pulse 76 to 120, and easily disturbed; respiration 20 to 26. She has lost five pounds in weight, with perceptible diminution of muscular vigor. During the last week the gait has shown some uncertainty, and there is increasing tendency to sleep during the day. All the plegic symptoms have steadily intensified since the first observation.

Associated neuritis of bulbar nerves may be ruled out.

The familiary or hereditary type of the disease may be excluded for want of corroborative history; her brothers and sisters being free from any suggestion of similar trouble. There is no evidence of any involvement of the cord, such as spasticity, increased muscular irritability, nor atrophy. Lack of sensory disturbances, as analgesia, thermic anesthesia, and also lack of muscular atrophies may exclude syringomyelia. The persistence of the patellar tendon reflex, absence of crises, and the Argyll-Robertson pupil dismiss tabes from consideration. Although there is a slight nystagmus, the intention tremor, scanning speech, rigidity and exaggerated knee-jerk of multiple sclerosis are wanting. If, as it has been claimed, an isolated area of a developing multiple sclerosis has its seat primarily in the medulla, and produced the symptoms seen in this patient, may it not be time (seven months) for symptoms of other sclerosed areas to manifest themselves?

The extensive involvement of the facial nerves seen in this case, though not of itself a part of the symptom-complex of true bulbar paralysis, still occurs with sufficient frequency not to jeopardize the diagnosis, providing the pathognomonic symptoms be present.

Dr. James G. Kiernan said that aside from the mere diagnosis of bulbar paralysis the local condition resulting in it should be considered. There was a growing tendency to take into account states which were considered by the older clinicians as auto-intoxications, or asthenic bulbar paralysis. Anyone who had followed the bulbar paralytic states, or the conditions presenting the symptoms in these children for a time dating back many years, would realize that there were numerous states in which, unless terminated early in death, patients recovered gradually and the condition disappeared. There were states here, as in many other neuroses, which, whether secondary to the toxins of germ disease or to autotoxic states, were dependent upon a biochemical lesion that did not necessarily effect a neuritic change. Every alienist could recall certain psychoses of an acquired type which presented psychic symptoms of locomotor ataxia or of paretic dementia, accompanied by cerebral disturbances of motor and sensory type, temporary in character. In locomotor ataxia and in paretic dementia every one of the symptoms of bulbar paralysis occur temporarily and disappear. On logical analysis it was clear that this temporary condition was due more to toxemia which might or might not be of an autotoxic state, but which was certainly temporary and which improved after a time. The same was true of psychoses which occurred in children. He had been puzzled by a certain class of cases among children of a paralytic type in which encephalic symptoms of bulbar disturbance were present, but in which the symptoms with improved nutrition and improved elimination disappeared. It seemed to him that the comparatively good outcome (which occurred in a by no means small proportion of these cases, so far as the individual symptoms were concerned of the allied conditions occurring in paretic dementia and in locomotor ataxia, in which the toxin and the toxemia played a part in symptom development) justified a distinction between a gross lesion and a temporary biochemical lesion. Even in organic cases a large amount of seeming organic disturbance was often due more to temporary shock, producing mental inability to use certain functions, than to actual loss of power. Even in hemiplegia, in which there was an apparent deep-seated symptom, much of the loss of power was not due to the destructive lesion, but to secondary disturbance produced by it. The same condition obtained in a number of sensory conditions which were peculiarly apt to occur in childhood. Dr. Cotton probably had seen after scarlet fever, after cholera infantum, and after other allied states, conditions which simulated very strongly the condition shown in the case, and which conditions had a good prognosis. In childhood a biochemical lesion might express itself much more seriously than a destroying organic lesion, might therefore be long-lasting, and yet might ultimately recover. The hearing in the present case was much better than one would first anticipate. Certainly bone conduction was in fair condition; so was general air conduction. In dealing with these defects, it must be remembered that in a child the inhibitory element, resulting from the child's attempt to determine its state, played a greater part than in an adult. The query naturally arose whether there were an organic lesion or whether there were merely an asthenic bulbar state.

Dr. E. S. Talbot said the facial bones of the child were markedly arrested in development. The bony structure of the chest itself was also notably arrested in its development. Where there was a marked arrest of development of the bones of the face, there was often such a condition of the chest-walls.

Dr. William J. Butler said that the symptoms had markedly increased since the patient first came under observation. There was only a small space left between the upper and lower eyelids, but now there is one-quarter of an inch. The child could not talk very clearly before, but still it was possible to understand her; now what she says is hardly intelligible. The voice had become much more feeble and was quite hoarse. He did not think the impaired hearing was associated with the present trouble. The child had been somewhat deaf for three years, according to the statement of the mother. There was nothing with which the atrophy of the tongue would correspond other than bulbar paralysis. As to the prognosis, he was inclined to differ from Dr. Kiernan. He thought that there had been actual degenerative changes, as the condition has been steadily progressive.

Dr. Daniel R. Brower considered the facial paralysis due to a destructive lesion, either in the nucleus or in the course of the nerve, because the facial muscles would not respond to faradism, and they showed the reaction of degeneration also with galvanism. The child had tongue atrophy and tongue paralysis. There was some disturbance both of respiration and circulation, yet the foundation of it all could be attributed to the diphtheria toxins. In his experience paralyses, the product of diphtheria toxins, were by no means as unfavorable as were paralyses from other causes. He was not disposed to regard the case as having an entirely unfavorable prognosis.

Dr. Butler said that the symptoms did not develop until some time—perhaps three or four months—after the diphtheria.

Dr. Brower had met with diphtheria paralysis in which there was a considerable interval between the acute symptoms and the paralytic development. There was a little uncertainty as to when the symptoms began.

Dr. Cotton stated that, according to the report of the mother, the symptoms were noticed when the child went to school in September. On one or two occasions in August the child made a noise during mastication and there was difficulty in swallowing. Shortly after this the mother observed that the child's speech was thick. She directed the child to keep things out of her mouth, but the child assured her that her mouth was empty. The attack of diphtheria occurred in April; but it was not until about September that there were indications of tongue paralysis. There had been some discussion between his associates and himself as to the extent of the impairment of hearing. The first time he thought the child's apparent deafness was largely due to her embarrassment. The next time he examined her she heard with some difficulty, but since then she heard quite readily, and the nurse said the child undoubtedly read from his lips. The mother had noticed the child's impairment of hearing two or three years ago. Until to-night he had not seen the child for a week, but during that time the disease was markedly progressive. The child was losing muscular tone rapidly; she was becoming generally asthenic, and in every way was getting worse. She had lost at least five pounds in six weeks. He brought the child to the Academy for the purpose of getting the opinions of the Fellows. He wished he could be as sure as Dr. Kiernan in giving a favorable prognosis. Personally, he thought the outcome of the case was extremely discouraging.

BOOK REVIEWS.

A PRACTICAL MANUAL OF INSANITY FOR THE MEDICAL STUDENT AND GENERAL PRACTITIONER. By DANIEL R. BROWER, A.M., M.D., LL.D., Professor of Nervous Diseases in Rush Medical College, etc., and HENRY M. BANNISTER, A.M., M.D., Formerly Senior Assistant Physician, Illinois Eastern Hospital for the Insane. W. B. Saunders & Company, Philadelphia and London.

THIS volume deserves very well the name of Practical Manual which has been chosen for it. It contains in its four hundred and twenty pages perhaps as good a comprehensive treatment of the subject of insanity as can well be put into the hands of those who know little of mental diseases. The book has the air of being written by men accustomed to teach. There is very little that is drily technical and much that is interestingly practical. The chapter at the end of the book on the method of examination of persons supposed to be insane contains in its five pages an excellent résumé of a difficult subject. The chapter on the ethics of insanity is perhaps not quite as complete as it should be for the importance of this subject, but then condensation has evidently been a constant desideratum in the making of the book.

The borderland and episodic states of insanity, the obsessions, phobias and impulses, are treated in a thoroughly sympathetic vein that shows the subjects to have been well studied. Such information as to the trophic change in the insane with regard to the fragility of their bones, which is sometimes observed, ought to be borne in mind by every physician. The ribs especially of such patients may break under very inadequate provocation. Campbell found that while the normal breaking strain of ribs is from 62 to 65 pounds, in paretics it averages only about 44 pounds and in female senile dements it may be as low as 11 or 12 pounds. "In paresis, the other long bones may be correspondingly fragile and probably from the same pathologic conditions that have produced a similar state of the bones in some tabetics."

On the whole, Brower and Bannister's book promises to find a place for itself among the medical manuals of special use to students and practitioners.

DISEASES OF THE UPPER RESPIRATORY TRACT; the Nose, Pharynx and Larynx. By P. WATSON WILLIAMS, M.D. (Lond.), Physician in Charge of the Throat Department at the Bristol Royal Infirmary; Physician to the Bristol Institute for the Deaf and Dumb. Fourth Edition. Illustrated. Longmans, Green and Co., New York, London and Bombay.

INASMUCH as this is the fourth edition of Dr. Williams' hand-book a detailed critique may be dispensed with and it will be sufficient to give it in general terms the commendation it very highly deserves. It is in every sense a practical treatise, simple and concise, yet adequate and affording information on every point likely to come within the needs of the practitioner. The arrangement is logical and systematic and the table of contents and index are comprehensive, so that as a work of reference it is convenient, while the relegation of matters of detail to a smaller font of type makes it especially easy to gain the important facts quickly.

Having thus cavalierly dismissed the scholastic side of the work we cannot but be a little more explicit in praising it from a mechanical standpoint. The illustrations, which are of such importance in a book on this subject, are both accurate and well executed, with the exception perhaps of the rough sketches from the author's note book, which we are accustomed to find in books of British origin, and which for the most part, as, for example, those on pages 100-196 and 197, do but little to elucidate the text. The colored plates are abundant and true to Nature, but the most pleasing and instructive of all are the stereoscopic photographs of patients and of anatomical preparations which represent an innovation that will no doubt have many imitators. A simple stereoscope accompanies the volume and with its aid the various dissections, etc., present a most realistic effect and may be studied with distinctly more satisfaction than ordinary cuts. The scheme is so simple that it seems strange it was not thought of long ago, particularly in connection with text-books on anatomy in which the plan would prove particularly advantageous. We compliment the author on his ingenuity.

BOOKS RECEIVED.

The MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

OPHTHALMIC MYOLOGY. By Dr. G. C. Savage. 8vo, 589 pages. Illustrated. Published by the author, Nashville, Tenn.

MANUAL OF CHILDBED NURSING, WITH NOTES ON INFANT-FEEDING. By Dr. Charles Jewett. 12mo, 84 pages. Fifth Edition. E. B. Treat & Co., New York.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION FOR THE YEAR 1901. Vol. XVLL. Philadelphia, 1901.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. New Edition. Edited by Dr. Albert H. Buck. Vol. IV., Erg.-Inf. Quarto, 872 pages. Illustrated. William Wood & Co., New York.

THE DIAGNOSIS OF SURGICAL DISEASES. By Dr. E. Albert. Translated by Dr. Robert T. Frank. 8vo, 419 pages. Illustrated. D. Appleton & Co., New York.